ACT Workbook
Teachers' Edition 2011-2012

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Teachers Introduction

Our Philosophy
Study Smart Tutors Inc was founded with the goal of helping students from varying economic backgrounds *build confidence, develop learning skills, and realize their college dreams.* Study Smart Tutors works with *schools, education foundations, and outreach organizations* to provide efficient and effective ACT prep.

We accomplish these lofty goals by employing the most competent academic achievers to instruct our students in ways that are *unique, interactive, and academically challenging.*

Goals of this workbook for teachers and students
This workbook and lesson notes should help teachers prepare their students for success on the ACT exam, thereby improving students' chances at college admission. This workbook will provide teachers with structured material, curriculum, and lessons as well as help them answer common student questions related to test preparation.

The following textbook includes

1. the student-version of our ACT workbook, with blank sections filled in for teachers
2. Practice problems for each question type
3. Teachers FAQ's about testing, test prep, and each of the three sections of the exam
4. Teachers notes about each page of the student edition and where students will struggle

Format of Teachers Editions
This book begins with some general FAQ's for teachers regarding test preparation. Each section of the workbook includes some specific teachers' FAQ's for that subject. The majority of the workbook is structured with the student edition of the workbook on the right ¾ of the page, with accompanying teachers' notes and suggestions on the left side.

Teachers Edition Only

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Format of Student Editions

Our belief is that students need to "take ownership" of their test preparation. We've learned through our experience that simply throwing giant textbooks at the students and hoping that the students/teachers understand how to use them effectively does not work. Our student books are typically much shorter than other books, and do not include nearly the number of methods as other books.

Further, our goal is to provide to students with a "skeleton" of a workbook, that they then fill in with the skin, muscles, tendons, etc. That is why many of the student pages include blank steps for solving or tackling specific problems and sections. Through the course of the lessons, students write down the steps to solving certain problems as the teacher presents them. Then, teachers model the steps for and with the students before the students then practice on their own:

"I(teacher) do, we(class) do, you(student) do"

How to utilize this workbook

This workbook can be utilized by teachers in a number of ways. This workbook can serve as a curriculum to a complete ACT course, can supplement other materials, can be a reference for teachers, etc.

You should feel free to make this workbook work for you and your class. We understand that every class may be different in terms of scheduling, timing, students, etc. And we hope that this book is formatted well enough to be used flexibly.

Utilizing Companion Materials

As you peruse this workbook, you will probably notice that although this book contain many practice problems, it does not contain full practice sections or full practice tests. This workbook is meant to be used in companion with REAL ACT PRACTICE EXAMS! We recommend that all classes utilize the full ACT exams that the ACT has released through their website.

In addition to teacher workbooks and student workbooks, each teacher will also receive a copy of recently released official ACT exams.

These exams are previous real ACT exams, and are the best way to simulate the conditions of the exam.

Companion Problems Chart

In each section, a chart has been made that segments the three "Real" practice tests by method/problem type described in this book. These problems can be completed as a class, as homework, or simply given as a place for further resource. These charts were made to help you as teachers customize lessons and practices for where your students need the most help. In the reading section, the problems are segmented by passage-type. In the grammar sections, the problems are segmented by grammar rule, and in the math section the problems are segmented by math topic/trick.

Lesson Plans

As mentioned previously, lesson plans for this workbook can be quite flexible. We have found that less is often more in terms of methods and student comprehension. Students seem to learn best when given a few key methods, time to practice them, and then feedback before moving onto the next topic. In the following pages, we will detail several example lesson plans which can be adapted as needed.

Key Sections

When it comes to preparing for the ACT, all methods are not created equally. Certain tactics can gain students hundreds of points while others may help students answer only one question. For many teachers, going through this entire workbook in its entirety will be quite difficult, and it's therefore important to discuss which sections are most important for students to understand.

Key Math Topics

1. Avoiding algebra-- plugging in your own number
2. Avoiding algebra-- plugging in the answer choices

Key Reading Topics

1. "Basic Strategy"-cover and predict
2. Prose Fiction strategy
3. Finding the thesis

Key Writing Topics

1. Avoiding the "sounds good method"

Key Science Topics

1. Understanding charts and graphs
2. Looking for key arguments/objectives

Teachers Edition Only

General Test Prep FAQ's for Teachers

As a teacher, what should I know about the ACT?

Because the ACT is much different than most other exams, preparing students for the ACT is often not similar to preparing students for other exams. Unlike most tests, the ACT does not test students in math, reading, and writing ability. Rather, the ACT simply tests a student's ability to answer "ACT style" questions in these categories.

What is the biggest mistake teachers make when preparing their students for the ACT?

Often, well-meaning high school teachers attempt to help students answer ACT questions using the same mindset and methods that they would use to help students in their academic classes. Although this is quite common, it is also dangerous. Sadly, the best way to answer an ACT math question may not be the classic "math class solution." For the ACT, the *"Scorecard doesn't ask how."* This means, that students' goals when preparing for the ACT should not be get better at geometry, but rather to get better at answering ACT geometry questions as quickly as possible with the least number of steps.

Code-switching?

The biggest struggle for many teachers when helping students prepare for the ACT is to remember that the goals of ACT prep are not always in parallel to the goals of their academic class. That's why it's imperative that teachers make clear to students when they are discussing methods for class and when they are discussing the test. For instance, writing a good high school English essay and writing a strong ACT essay are NOT the same.

Basic Information for Teachers

What is the ACT Exam?

The ACT is a test high school students take for college admissions. The test has four subject areas: Reading, English, Science, and Math, as well as an optional essay. The test has about 215 questions and is about three hours and 30 minutes long.

How important are the SAT/ACT?

The weight placed on ACT scores varies from school to school. Colleges and universities also consider high school grade point average and academic transcript, letters of recommendation, interviews, and personal essays when deciding on admissions. In addition, virtually all U.S. colleges and universities will accept ACT scores in lieu of SAT scores.

Although not a hard and fast rule, typically larger public universities rely more on "hard" factors such as ACT scores, while smaller private universities typically consider more "soft" factors such as admissions essays.

Why do colleges use the ACT as a factor in college admissions?

Tests like the SAT and ACT are the only manner for colleges to compare students on an even playing field. Because the rigors of different high school courses cannot easily be compared, colleges use the SAT/ACT as a sort of tie-breaker between students from different schools, locations, or backgrounds.

Who creates the ACT?

The ACT is written by ACT, Inc. The company also writes other exams such as the PLAN, EXPLORE, and COMPASS tests.

When is the ACT given?

The ACT is given six times per year in the following months: September, October, December, February, April, and June.

When should students register for the ACT?

Registration deadlines are approximately 5 weeks before each test date. We suggest that students register at least 6 - 8 weeks ahead of time to avoid late fees and ensure that students can take the ACT at their preferred test center. The test center may fill up, in which case students would have to consider alternate options, such as testing at a different test center or moving to the next ACT Exam.

How can students register?

The easiest way to register is to register online, after a student creates an "ACT Student Web Account." These accounts allow students to register and view their scores online, add/remove the writing test, and send scores to designated colleges.

How much does it cost to take the ACT?

The ACT costs $34 without the writing section and $49.50 with the writing section. Each of these registration fees includes score reports for the student, the student's school, and up to four colleges. Late registration will cost a student an additional $21. Before paying this fee, students should speak to school administration regarding fee waivers. Students who are eligible are able to receive up to two fee waivers each for the SAT and ACT.

How long does it take for students to receive their scores back?

The scores are usually mailed out 4 - 6 weeks after the test dates. Students can also look up their scores online through the ACT's website.

How many times can students take the ACT?
Students can take the test up to twelve times. Students' score report shows students' current test scores as well as past reports.

Are students allowed to use a calculator?
Yes, but it is not required. We recommend that students use a graphing calculator if they already have one and are comfortable using it. Otherwise, a scientific calculator will suffice.

What test-taking arrangements are available for students with disabilities?

Students with disabilities whose documentation has been validated by the ACT receive testing accommodations when taking the ACT and other tests. Students with disabilities that necessitate use of a computer for writing can use one for the essay portion of the ACT writing section.

SAT vs. PSAT vs. ACT vs. Subject Tests vs. Explore/PLAN

Should students take the SAT or the ACT?
All colleges accept either the SAT or the ACT for admissions. Although the SAT is more popular in California, over 1 million students take the ACT each year. Traditionally, the SAT was considered more of an aptitude test and the ACT was considered more of an achievement test. Changes to the SAT in recent years and particularly the switch to the New SAT in March 2005 have narrowed this gap considerably. Both tests cover math, grammar, and reading comprehension, although with a different emphasis in each case. Theoretically the essay portion of the ACT is optional, but many colleges that are taking the New SAT are requiring the ACT essay, so plan accordingly.
The only sure way to see on which exam students will perform better is to take both tests and compare scores. Certain students seem to score better on one test or another, so it is always a good idea to take both. The easiest way to generalize about the difference between the tests is that the SAT is not conceptually advanced but tricky and the ACT is difficult but straightforward.

How do the ACT, the PLAN, and the EXPLORE tests compare?
Students typically take the EXPLORE in the 8th or 9th grades, PLAN in the 10th grade, and the ACT during their junior and/or senior years.

The EXPLORE is the first part of the three exams written by the ACT. The ACT writers encourage students to take the EXPLORE in 8th or 9th grade, PLAN in 10th grade, and the actual ACT during 11th and 12th grades.

The EXPLORE Test

The EXPLORE, just like the ACT includes four multiple-choice tests:

Subject	Number of Questions	Time
English	40	30 minutes
Math	30	30 minutes
Reading	30	30 minutes
Science	28	30 minutes

The PLAN

The PLAN exam, like the ACT includes four multiple-choice tests: English, Math, Reading, and Science.

Subject	Number of Questions	Time Allowed
English		30 minutes
Usage/Mechanics	30	
Rhetorical Skills	20	
Math		40 minutes
Pre-Algebra/Algebra	22	
Geometry	18	
Reading	25	20 minutes
Science	30	25 minutes

The PLAN provides information about possible careers for students depending on their scores. Please make sure to discuss this report with students so that they understand that these are not incredibly significant, and that their scores on this exam has VERY little correlation to their chances of success or career opportunities.

ACT vs. Plan vs. Explore

Exam	Target Grade Level	Composite Score Range
EXPLORE	8 and 9	1 to 25
PLAN	10	1 to 32
ACT	11 and 12	1 to 36

All three test students in English, math, reading, and science. However, because the tests are geared for different grade levels, the material tested gets more difficult. This is why the top scores for each test are different.

Which ACT date is best to take?
First, there is no such thing as an "easier" or "harder" ACT date. All of the exams are curved so that, for example, a Math score of 21 in April is equivalent to a 21 in June or October or on a test give from years ago. Except in very special circumstances, we recommend that students do not take the ACT until the spring of their junior year. Prior to that, students should take the PLAN and EXPLORE in eighth and tenth grades respectively.

Most students now take the ACT **two or three times** in order to ensure that their scores represent the best that they can do. The typical schedule involves the SAT in April and/or June of the junior year with many students opting to try to improve their scores in October of the senior year.

How many times should students take the ACT?
Because almost every college will combine a student' best scores in each section regardless of test date, it is to the student's advantage to take the ACT multiple times. According to data published by the ACT, 55% of students improve their composite scores when taking the test the second time. Students who are relatively low scores typically improve more than high scorers on the second test date.

When should students guess on an ACT questions?
Multiple choice questions on the ACT contain four (or five in the math section) answer choices. The ACT does not deduct points for wrong answers. This means that it is ALWAYS in a student's best interest to guess on every question.

What do ACT scores look like?

The ACT has four scores, each on a scale of 1 to 36. The sub-scores are in writing (1-12, optional), mathematics (1-36), English (1-36), science (1-36), reading (1-36). Each section is curved so that the national average for any test date is approximately the same. There is a complicated formula that translates raw scores to scaled scores. This is not something students should worry about.

What is the Perfect ACT Score?

The highest possible ACT score is 36, with a score of 12 on the optional essay. This is very rare. Only a few students around the world receive perfect scores each year.

What is a good score on the ACT?

We often preach to students that "the ACT won't get you into any college, but it will keep you out!" Meaning, a good score is one that will get students into the college of their choice. While class rank, extra-curricular activities, major, recommendations, essays, and other factors also come into play in college admissions, below is an estimate of what score is needed on the ACT for various colleges:

What is the average score on the ACT?

Section	Average score	College Readiness Benchmark
English	20.6	18
Mathematics	21.0	22
Reading	21.4	21
Science	20.9	24
Optional Writing Test	7.7	
Composite	21.1	

Dear Reader,

You're probably looking through this book as you sit in a classroom, and saying to yourself, "What am doing here?" Don't worry, every student is thinking the same thing.

At some point, you're also going to ask yourself why you have to take the ACT. You probably think that you take enough tests during the course of your schooling as you sit here wondering why that isn't enough.

The answer is that the ACT has been around for a long time as an instrument of torture. It exists to test your will and see where your breaking point is. In fact, the ACT is given to terrorists in CIA-operated prisons around the world to get them to confess their secrets.

Just kidding. The ACT actually exists to supposedly show colleges how the grades you got at your high school compare to the grades that other kids get. Colleges want to know what an "A" in geometry class means. The better you do on ACT math, the more highly the schools will look upon your "A's" in high school math classes.

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Since we are going to be spending a lot of time tackling multiple choice questions throughout this class, let's start with one right now:

Which of the following facts is true about the ACT?

(A) The ACT measures with certainty how well you will do in life. It perfectly predicts your ability to succeed in high school and college classes as well as your activities outside the classroom.

(B) The "A" in ACT stands for Aptitude because it measures your "intellectual aptitude" otherwise known as your intelligence.

(C) The "A" in ACT stands for "Achievement" because it measures how much you have "achieved" or learned during your life as a student to this point.

(D) The ACT tests your knowledge of the ACT.

Answer:
Only (D) is true. The folks who write the ACT cannot find any proof that the ACT measures your abilities, achievements, or aptitude. So far, the only thing they can say with certainty about your ACT score is that it will provide a "predictor of your grades during your freshman year in college."

In essence, don't take your ACT score to mean more than it does. The ACT simply tests your knowledge of how well you understand the ACT. Nothing more.

Ok…so if all that is true, why should I bother taking and preparing for the ACT?

Good question. Like we mentioned before, the ACT is one of many factors that colleges use to determine who to admit. Although there are certainly other factors, the ACT is undeniably one of the most important.

The ACT is one of the few aspects of a student's application that can be compared across states, cities, schools, and even countries. The ACT is one of the few STANDARD means for comparing today's high school students.

Because the ACT is a "standardized" test, we know exactly what we will be tested and how the questions will be asked. The ACT doesn't change much from year to year, and the people who write it aren't all that creative. That means we can predict and prepare for every question type and trap that can be thrown at you.

Intro Slides 4

WITHOUT FURTHER ADO….

LET'S GET STARTED!

ACT Course Goal Sheet

Colleges that I want to apply to:

1. _____ **Average 2009 Freshman ACT Score:** _____

Math_____**Reading**_____**English**_____**Science**_____

2. _____ Average **2009 Freshman ACT Score:** _____

Math_____**Reading**_____**English**_____**Science**_____

3. _____ Average **2009 Freshman ACT Score:** _____

Math_____**Reading**_____**English**_____**Science**_____

4. _____ Average **2009 Freshman ACT Score:** _____

Math_____**Reading**_____**English**_____**Science**_____

5. _____ Average **2009 Freshman ACT Score:** _____

Math_____**Reading**_____**English**_____**Science**_____

Math Raw Score Target:_____

Reading Raw Score Target:_____

English Raw Score Target:_____

Science Raw Score Target:_____

Why are you preparing for the ACT?

_____

_____

Goals for ACT Prep

1._____

2._____

3. _____

ACT Mini Lesson #1-Setting Goals

ACT Course Goal Sheet (Intro Slides 7-8)

Colleges that I want to apply to:

1. _____ **Average 2009 Freshman ACT Score:** _____

Math_____Reading_____English_____Science_____

2. _____ Average **2009 Freshman ACT Score:** _____

Math_____Reading_____English_____Science_____

3. _____ Average **2009 Freshman ACT Score:** _____

Math_____Reading_____English_____Science_____

4. _____ Average **2009 Freshman ACT Score:** _____

Math_____Reading_____English_____Science_____

5. _____ Average **2009 Freshman ACT Score:** _____

Math_____Reading_____English_____Science_____

Math Raw Score Target:_____

Reading Raw Score Target:_____

English Raw Score Target:_____

Science Raw Score Target:_____

Why are you preparing for the ACT?

Goals for ACT Prep

The goal of this worksheet is for students to set specific goals for their college/test prep process. In our experience, we have found that the more specific goals students set, the more motivated and willing they are to study.

The other reason for setting specific ACT score goals is that the score goal should affect how students study for the test, as well as their actual strategy on the day of the test.

This information can be found on the websites for most colleges, and once students see the scores they need to achieve, they can then set a specific study plan to reach those goals.

Scaled vs. Raw

The following table outlines how the ACT converts from "raw scores" in each section to scaled scores (out of 36). Take note of the scaled scores in each section that you need to receive to achieve your goals and then work backwards to figure out the "Raw Score" equivalents. *Circle the approximate Raw Score that you will be striving to achieve in each section.*

Scaled Score	English	Math	Reading	Science
36	75	60	40	40
35	73-74	59	39	39
34	71-72	58	38	-
33	70	56-57	37	38
32	69	55	36	37
31	67-68	54	35	-
30	66	52-53	34	36
29	65	50-51	32-33	35
28	63-64	48-49	31	33-34
27	62	45-47	30	32
26	60-61	42-44	29	30-31
25	58-59	40-41	27-28	28-29
24	56-57	37-39	26	26-27
23	54-55	35-36	24-25	25
22	52-53	33-34	23	23-24
21	49-51	31-32	22	21-22
20	46-48	29-30	20-21	19-20
19	43-45	26-28	19	18
18	41-42	24-25	18	16-17
17	39-40	21-23	16-17	15
16	36-38	17-20	15	14
15	33-35	14-16	14	13
14	30-32	11-13	12-13	12
13	28-29	9-10	11	11
12	26-27	7-8	9-10	10
11	24-25	6	8	9
10	22-23	5	6-7	7-8
9	20-21	4	-	6
8	17-19	3	5	5
7	14-16	-	4	4
6	11-13	2	3	3
5	8-10	-	-	-
4	6-7	1	2	2
3	4-5	-	-	1
2	3	-	1	-
1	0-2	0	0	0

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31	67-68	54	35	-
30	66	52-53	34	36
29	65	50-51	32-33	35
28	63-64	48-49	31	33-34
27	62	45-47	30	32
26	60-61	42-44	29	30-31
25	58-59	40-41	27-28	28-29
24	56-57	37-39	26	26-27
23	54-55	35-36	24-25	25
22	52-53	33-34	23	23-24
21	49-51	31-32	22	21-22
20	46-48	29-30	20-21	19-20
19	43-45	26-28	19	18
18	41-42	24-25	18	16-17
17	39-40	21-23	16-17	15
16	36-38	17-20	15	14
15	33-35	14-16	14	13
14	30-32	11-13	12-13	12
13	28-29	9-10	11	11
12	26-27	7-8	9-10	10
11	24-25	6	8	9
10	22-23	5	6-7	7-8
9	20-21	4	-	6
8	17-19	3	5	5
7	14-16	-	4	4
6	11-13	2	3	3
5	8-10	-	-	-
4	6-7	1	2	2
3	4-5	-	-	1
2	3	-	1	-
1	0-2	0	0	0

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ACT Introduction:
Before we get into any specifics on how to prepare for the ACT, it's important to understand exactly what the ACT is, what material will be tested and so on. Take a few minutes and try to digest these facts about the ACT, because some of them may be surprising.

Definition of Raw Scores:
The ACT is scored in the same way as most tests. For every question you answer correctly you will **receive 1 raw point**.   Then, those raw points are converted to scale the exam from 1-36 in each section.

What does the ACT measure?
The ACT features many types of questions including math, writing and vocabulary. However, you could be the best writer in the world or have received A+'s on all of your high school math tests and not do well on the ACT. The ACT claims to measure your reasoning ability in these subject areas, but really the ACT simply measures your knowledge of the ACT itself. Sound silly? It is!

How is the ACT scored?
Each subject area of the test-- math, reading, English, and science-- is scored on a scale between 1 and 36. The ACT is graded on a curve and each section is scaled so that the average score is **approximately 21.**

When Can I Take the ACT?
The ACT is offered six times per school year. The ACT is offered in the following months…

1._____

2. _____

3. _____

4. _____

5. _____

6. _____

ACT Mini Lesson #2-ACT Introduction:

ACT Introduction:
Before we get into any specifics on how to prepare for the ACT, it's important to understand exactly what the ACT is, what material will be tested and so on. Take a few minutes and try to digest these facts about the ACT, because some of them may be surprising.

Because the ACT is a curved exam, we suggest teachers remind students that if they can simply CONCENTRATE and FOCUS slightly more than the average students, they can make up significant ground in sections towards the end of the test, where the curve is significantly lower than in

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How is the ACT scored?
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When Can I Take the ACT?
The ACT is offered six times per school year. The ACT is offered in the following months…

1. September

2. October

3. December

4. February

5. April

6. June

What's on the ACT?

The ACT will be divided into four "tests" and will take a total of 3 hours and 20 minutes. The four tests on the ACT will always have the same number of questions, and will be given in the same order. The "optional" 30-minute essay question will always come last.

Section	Number of questions	Time (minutes)	Average score	College Readiness Benchmark	Content
English	75	45	20.6	18	Grammar/usage/mechanics and rhetorical skills
Mathematics	60	60	21.0	22	pre-algebra, elementary algebra, intermediate algebra, coordinate geometry, geometry, and elementary trigonometry
Reading	40	35	21.4	21	reading comprehension
Science	40	35	20.9	24	interpretation, data analysis, evaluation, reasoning, and problem-solving
Optional Writing Test	1 essay prompt	30	7.7		Writing
Composite			21.1		

College Readiness Benchmarks

The ACT defines the College Readiness Benchmarks as "the minimum ACT test scores required for students to have a high probability of success in credit-bearing college courses—English Composition, social sciences courses, College Algebra, or Biology."

What Does the ACT Mean by "Success" in those Courses?

According to the ACT, "Students who meet a Benchmark on the ACT or COMPASS have approximately a 50 percent chance of earning a B or better and approximately a 75 percent chance of earning a C or better in the corresponding college course or courses."

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ACT Mini Lesson #3-Facts about the Four ACT "Tests" + the Essay

English Test

1. _____

2. _____

3. _____

Math Test

1. _____

2. _____

3. _____

Reading Test

1. _____

2. _____

3. _____

Science Test (35 Min 40 Q)

1. _____

2. _____

3. _____

Writing Test (Optional) (30 Min)

1. _____

2. _____

ACT Mini Lesson #3-Facts about the Four ACT "Tests" + the Essay

English Test

1. **(45 Min 75 Q)**
2. 5 Essays will be on the left, words and phrases will be underlined
3. Grammar, Punctuation, Structure and Rhetoric style, and organization will be tested

Math Test

1. **(60 Min 60 Q)**
2. Easy questions tend to come first, difficult tend to come at the end
3. Questions will be from pre-algebra, algebra, coordinate geometry, plane geometry and trig

Reading Test

1. **(35 Min 40 Q)**
2. 4 Reading Passages
   a. Prose
   b. humanities
   c. social sciences
   d. fiction
3. Each passage will have 10 questions

Science Test

1. **(35 Min 40 Q)**
2. No specific science knowledge required
3. 6 passages of scientific info
4. Questions will require you to interpret graphs, charts, data and scientific arguments

Writing Test (Optional)

1. **(30 Min 1 prompt)**
2. One prompt, state your position
3. Two graders score 1-6, total out of 12 possible

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Test-Taking Tips

How to think about the ACT:
Here's the big secret to learn for standardized tests. They are standardized! This means that they are basically the same each year and that they always test certain concepts in the same way. If you can learn and begin to understand the way that the ACT expects you to think, you can begin to outsmart them and spot the traps that will be laid for you.

The Test Booklet:
Your answer sheet will be the only thing that will be graded. Make sure to mark up your test booklet. Physically cross out wrong answers, draw diagrams, and don't be afraid to show your work. On the reading sections, underline key parts of the passages and make notes in the margins as you go.

Process of Elimination:
Every multiple choice question on the ACT has either three or four wrong answers-depending on the section-- and only one correct answer. By looking for the wrong answers instead of the correct ones, you will often be left with just a few answer choices from which you can make an educated guess.

Try to use process of elimination to solve the following question. Don't worry, there won't be any questions like this on the actual ACT.

What is the capital of North Dakota?

> A. Billings
> B. Dallas
> C. Bismarck
> D. Fargo

Which answers can you eliminate?

Be quick but don't hurry:
Famous UCLA basketball coach John Wooden told this to his players on the basketball court, but it applies to the ACT as well. The ACT isn't scored like a typical test where the hard questions are worth more points than the easy ones. **On the ACT, every question is worth the same amount.**

How does this help you? Since all the questions are worth the same amount, <u>don't rush through the easy and medium questions to get to the hard ones. Concentrate on the easy and medium questions so that you won't lose points on questions that you know the answer to.</u>

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Here's the big secret to learn for standardized tests. They are standardized! This means that they are basically the same each year and that they always test certain concepts in the same way. If you can learn and begin to understand the way that the ACT expects you to think, you can begin to outsmart them and spot the traps that will be laid for you.

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Try to use process of elimination to solve the following question. Don't worry, there won't be any questions like this on the actual ACT.

What is the capital of North Dakota?

> A. Billings
> B. Dallas
> C. Bismarck
> D. Fargo

Which answers can you eliminate? Probably (B) and (E).

Be quick but don't hurry:
Famous UCLA basketball coach John Wooden told this to his players on the basketball court, but it applies to the ACT as well. The ACT isn't scored like a typical test where the hard questions are worth more points than the easy ones. **On the ACT, every question is worth the same amount.**

How does this help you? Since all the questions are worth the same amount, <u>don't rush through the easy and medium questions to get to the hard ones. Concentrate on the easy and medium questions so that you won't lose points on questions that you know the answer to.</u>

Order of difficulty is an extremely important concept for students to understand.

ACT questions are ranked either easy, medium, or difficult by the test writers. Most ACT sections are ordered from easy to difficult.

Although this order is similar to that of many high school tests, on the ACT, ALL THE QUESTIONS ARE WORTH ONE POINT!

Because students have been conditioned to believe that they must answer hard questions correctly to get "A's" on high school tests, they often rush through easy questions in order to get to harder ones.

That strategy kills many students' scores. Because all questions are worth the same amount, the best way to tackle the test is to concentrate on the easy and medium questions and not worry too much about hard questions.

<u>*Students DO NOT need to answer hard questions correctly in order to get a "good" score!*</u>

Remind students that 2/3 of the test is composed of either easy or medium questions. And that the average scores on the means getting only about 50% of the questions correct!

The easiest way for students to raise their scores is to avoid making silly mistakes on easy and medium questions!

ACT Mini Lesson #4-ACT Strategy

Do the questions follow order of difficulty?

Strictly speaking, ACT questions do not fall in a specific order of difficulty. However, there is a general truth to the statement that math questions become harder as the section progresses, and reading and science passages become more difficult as the section progresses.

Despite this, we still want to find and solve easy questions first!

Easy vs. Medium vs. Hard

What type of student does the ACT want to get easy questions correct?

Answer:_____

What type of student does the ACT want to get medium questions correct?

Answer:_____

What type of student does the ACT want to get difficult questions correct?

Answer:_____

Example:

Here is a difficult math question, are there "easy" answers you can eliminate?

> *25. Cindy walked to work at an average speed of 6 miles an hour and biked back along the same route at 10 miles per hour. If her total traveling time was 2 hours, how many miles is it from her house to work?*
>
> A. 6
> B. 6.25
> C. 7.5
> D. 8
> E. 10

Because you know that this is a hard question, why can't (D) be the answer?

_____

By the same principle, what other answers are not correct?

_____

ACT Strategy (Intro Slides 32-36)

Do the questions follow order of difficulty?
Strictly speaking, ACT questions do not fall in a specific order of difficulty. However, there is a general truth to the statement that math questions become harder as the section progresses, and reading and science passages become more difficult as the section progresses.

Despite this, we still want to find and solve easy questions first!

Easy vs. Medium vs. Hard

What type of student does the ACT want to get easy questions correct?

Answer: *Almost everyone!*

What type of student does the ACT want to get medium questions correct?

Answer: *Average student should get some correct and some wrong*

What type of student does the ACT want to get difficult questions correct?

Answer: *Students who are very skilled in the subject being tested*

Example:

Here is a difficult math question, are there "easy" answers you can eliminate?

> *25. Cindy walked to work at an average speed of 6 miles an hour and biked back along the same route at 10 miles per hour. If her total traveling time was 2 hours, how many miles is it from her house to work?*
>
> A. 6
> B. 6.25
> C. 7.5
> D. 8
> E. 10

Because you know that this is a hard question, why can't (D) be the answer?
Answer: Simple math answer (taking average of 6 and 10) is NEVER correct on difficult questions!

By the same principle, what other answers are not correct?
Answer: (A) and (E) are repeats of numbers in the problem. Repeats are NEVER going to be correct on hard math questions!

Three Types of Questions

1. _____

2. _____

3. _____

Guessing and Process of Elimination

The ACT differs from the SAT in that there is NO GUESSING PENALTY! This means that you must fill in an answer on all 215 questions on the ACT!

Remember, each question contains only 1 correct answer and 3 or 4 incorrect ones. Use POE to spot wrong answers. You won't know the exact correct answer on every question, so use your POE skills to make educated guesses.

Guessing Blindly
There will be a few questions in each section that you will probably have absolutely no clue how to solve.   When this happens, you want to make sure to make a guess, you have a ¼ or 1/5 chance of getting the question right. What letter should you choose? Is (C) the most common answer?

Pick a Letter of the Day?

A. _____

B. _____

C. _____

Three Types of Questions (Blank for students)

> *Students must understand that the ACT is written purposely so that they will struggle for time!*
>
> *Students need to be able to recognize what types of problems will take too much time to solve, and therefore should simply guess and move on!*
>
> *Students should practice re-ordering questions so that they solve the EASY ones FIRST, and leave the hard questions until the end.*
>
> *It's okay to guess on the hard ones!*

1. ***Do now-***you know how to solve, and it won't take that long
2. ***Do later-***you may or may not know how to solve, there will be a lot of steps to solving
3. ***Do never-***you have no clue how to solve and you never will, guess and move on

Guessing and Process of Elimination

The ACT differs from the SAT in that there is NO GUESSING PENALTY! This means that you must fill in an answer on all 215 questions on the ACT!

Remember, each question contains only 1 correct answer and 3 incorrect ones. Use POE to spot wrong answers. You won't know the exact correct answer on every question, so use your POE skills to make educated guesses.

Guessing Blindly

There will be a few questions in each section that you will probably have absolutely no clue how to solve. When this happens, you want to make sure to make a guess, you have a ¼ chance of getting the question right. What letter should you choose? Is (C) the most common answer?

Pick a Letter of the Day!

   a. On questions where you will be making a random guess, always choose the same letter
b. This will increase your chances of at least getting some of these questions correct
c. Only use this strategy when you cannot use POE to eliminate any answers

Student Page 13 / Intro Slides 37 - 40

ACT Intro Summary

Key Intro Section Notes:

My goals for ACT prep

_____
_____

What's on the ACT?

_____
_____

Guessing

_____
_____

ACT Intro Summary

Key Intro Section Notes:

My goals for ACT prep

_____

_____

What's on the ACT?

_____

_____

Guessing

_____

_____

Student Page 14

ACT Math

(TEACHER EDITION ONLY)

What makes ACT math different?

Students struggle because the math questions are often unlike what they have seen before. The ACT is written so that students struggle to finish on time, and students need to be aware that they cannot spend a significant amount of time on a single problem. Most students falter in math because they either make silly mistakes or become flustered because they can't figure out how to begin solving the problems.

How much high school math do students need before they can start preparing for the ACT?

The difficult aspect of the ACT math section is not math. In terms of hard skills, once students have completed algebra I and geometry, they will have been exposed to a vast majority of the ACT math content. Although the ACT does include Algebra II, it is only a small fraction of the math section. Students need to only understand basic trigonometry to solve the four ACT trigonometry questions.

Teacher Edition Only

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ACT Math Mini Lesson #1-ACT Math Intro

1. _____
   _____
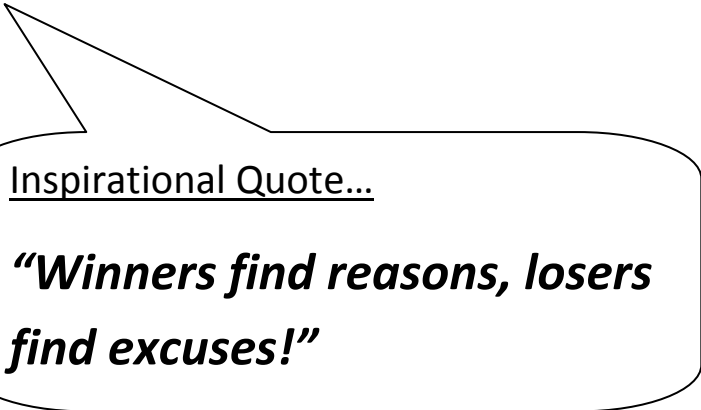
2. _____
   _____

3. _____
   _____

4. _____
   _____

ACT Math Section breakdown:

The ACT is very direct and straight-forward in letting you know what information will be tested. That means you have no excuses for being surprised by any question.

Inspirational Quote…

"Winners find reasons, losers find excuses!"

33 Algebra Questions

- 14 Pre-Algebra (integers, prime numbers, etc) questions based on basic number theory, and manipulation of fractions and decimals

- 10 Algebra I questions based on linear equations, ratios, percents, etc

- 9 Algebra II questions based on exponents, roots, quadratics, etc

23 Geometry Questions

- 14 Plane Geometry questions based on angles, shapes, etc

- 9 Coordinate Geometry questions based on slope, graphing, midpoint, etc

4 Trigonometry Questions

- 4 Trig questions based on sine, cosine, tangent, trig identities, trig functions, etc

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ACT Math Mini Lesson #1-ACT Math Intro (Math Slides 3-7)

1. The ACT Math Section will give you 60 minutes to answer 60 questions on a variety of "typical high school math" topics.
2. Unlike other sections, which contain 4 answer choices, questions in the math section <u>contain 5 answer choices.</u>
3. Many easy questions will be at the beginning, and many difficult questions will come towards the end.
4. You WILL NOT be provided with any formulas. Take a look at the types of questions below so that you will know what formulas to study.

Math Section breakdown:

Remind students that there is no excuse to be surprised by the math on the ACT. The test is very straightforward in telling students what types of questions will appear.

Students should concentrate study time on topics such as basic algebra, where there are many questions, rather than trig, where there are only a few questions.

The ACT is very direct and straight-forward in letting you know what information will be tested. That means you have no excuses for being surprised by any question.

Inspirational Quote…

"Winners find reasons, losers find excuses!"

<u>33 Algebra Questions</u>

- 14 Pre-Algebra (integers, prime numbers, etc) questions based on basic number theory, and manipulation of fractions and decimals

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- 14 Plane Geometry questions based on angles, shapes, etc

- 9 Coordinate Geometry questions based on slope, graphing, midpoint, etc

<u>4 Trigonometry Questions</u>

- 4 Trig questions based on sine, cosine, tangent, trig identities, trig functions, etc

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ACT Math Tips

1. _____

    a. _____

        _____

    b. _____

        _____

2. _____

    _____

3. _____

4. _____

5. _____

    _____

ACT Math Tips

1. Make two passes through the questions

    a.   On the first pass, answer all the ones that you <u>know how to solve</u> and guess on all the ones that you have no idea how to solve.

    b.   Save the questions that you could solve with a little more thought for the end.

2. Use your "logic brain" to eliminate illogical answers

3. Take the questions in bite-sized chunks

4. Avoid falling for traps (partial answers, simple math on difficult questions)

5. Understand, that on certain problems, you will be given extra information that is not needed to solve the problem

Student Page 17 / Math Slides 8-9

Calculator Quick Facts:

- o   Make sure to bring a calculator to the test!

- o   Your calculator doesn't need to be fancy. Just make sure that it doesn't beep or have a keyboard.

- o   Be careful when putting numbers in the calculator. Check each number as you input it. Always clear your work after you finish a problem or a step.

- o   Your calculator only does what you tell it. Use the calculator as a tool, not a crutch.

- o   **Set up the problem on paper first. By doing this, you will prevent confusion and careless errors.**

- o   Don't rely on the memory function on your calculator. Scratch paper is here for a reason!

- o   Make sure you are performing equations in the proper order, whether you are using pencil and paper or a calculator.

- o   Make sure your calculator has fresh batteries. It's always a good idea to bring extras, just in case.

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- Make sure to bring a calculator to the test!

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- Make sure you are performing equations in the proper order, whether you are using pencil and paper or a calculator.

- Make sure your calculator has fresh batteries. It's always a good idea to bring extras, just in case.

Encourage students that it is worth taking the few extra seconds to use their calculators. Students will often try to save time by using "mental math."

Unfortunately, most students are not as good at mental math as they think that they are!

Student Page 18 / Math Slides 10

Key Terms in Math

Key Term	Definition	Examples
Integer		
Real number		
Rational number		
Prime number		
Remainder		
Absolute Value		
Product		
Quotient		
Sum		
Difference		
Consecutive		
Distinct		
Union		
Intersection		
Rules of zero		

ACT Math Mini Lesson #2-Math Vocab

Key Terms in Math

Most students will be familiar with most of these key terms. However, for lower scoring students, these may be very helpful to fill in and discuss.

Highlight to ALL STUDENTS that ZERO AND ONE ARE NEVER PRIME NUMBERS! And, that there will be at least one question which directly tests this concept.

Also, students should expect to face at least one question which tests their knowledge of "remainders"

Other often-confused terms are highlighted.

Key Term	Definition
Integer	Any number that is not a fraction
Real number	Any rational or irrational number
Rational number	An integer or a fraction
Prime number	***A number divisible by only one and itself***
Remainder	***The number left over when one integer is divided by another***
Absolute Value	A real number regardless of sign
Product	Multiply
Quotient	Divide
Sum	Add
Difference	Subtract
Consecutive	***Integers in a sequence***
Distinct	***Non-repeats***
Union	***The collection of points the lie in sets A,B, or both***
Intersection	The point where two straight lines meet
Rules of zero	0/x = 0 where x is not equal to 0. a0 = 1, 0a = 0, a*0 = 0, a/0 is undefined

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ACT Math Fundamentals:

1. Be sure to be familiar with math terminology. Many trap answers rely on you misunderstanding what the question asks you to do.

2. Let your calculator help you avoid math errors, but don't rely on it as a crutch.

3. Know the rules of multiplying and dividing exponents, raising a power to a power and expressing fractional and negative exponents.

4. For the purposes of the ACT, square roots must be positive, but exponents can have both positive and negative roots.

ACT Arithmetic:

1. Arithmetic calculations must be performed in the correct order of operations (PEMDAS)

2. Use the distributive property whenever possible

3. Understand how to perform all arithmetic operations with fractions. Let your calculator help you whenever possible.

4. Understand the difference between ratios and proportions

5. Use the ratio box to solve ratio questions

6. Use the average pizza to solve average questions

7. Use the chair method to solve permutation and combination questions

ACT Math Fundamentals:

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7. Use the chair method to solve permutation and combination questions

The following list is a quick summary of some of the aspects that will be tested in this section. A few of the key methods are bolded and italicized.

All of these points need not be reviewed in depth, but rather can serve as a reference for students.

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ACT Math Mini Lesson #3-Ratios

A ratio is simply a comparison between two parts of a whole. Ratios can be written in a few different ways.
- ➢ a/b
- ➢ the ratio of a to b
- ➢ a:b

Fractions vs. Ratios
- ➢ Ratio: Part/Part
- ➢ Fraction: Part/Whole

Whenever you see a ratio problem, you will always make a RATIO BOX!

	PART	PART	WHOLE
RATIO			
MULTIPLIER			
ACTUAL #			

10. A jar contains cardinal and gold jelly beans,
The ratio of gold jelly beans to cardinal jelly beans
Is 5:3. If the jar contains a total of 160 jelly beans,
How many of them are cardinal colored?

A. 30
B. 53
C. 60
D. 100
E. 160

Step 1- Set up a Ratio Box

RATIO			
MULTIPLIER			
ACTUAL #			

Step 2: Enter what you know (Ratio and Actual)

Step 3: Use what you know to find what you don't know (Multiplier). Add it to your box

Step 4:Use the box to find what the problem is asking. (Actual # of Cardinal)

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A ratio is simply a comparison between two parts of a whole. Ratios can be written in a few different ways.

➢ a/b
➢ the ratio of a to b
➢ a:b

Fractions vs. Ratios
➢ Ratio: Part/Part
➢ Fraction: Part/Whole

Whenever you see a ratio problem, you will always make a RATIO BOX!

We suggest that before teaching the methods to solve ratio questions, that teachers review the major difference between a ratio and a proportion.

A ratio compares Parts to Parts A fraction compares Parts to Whole.

*Although ratios can be written as fractions, they are NOT fractions)

Ratio box steps

1. Fill in ratio column (make sure to put in the correct order)
2. Add the two parts of the ratio to get the "whole"
3. Fill in the actual column that is given
4. Find the multiplier between the ratio column and the actual column
5. Fill in the correct multiple all the way across
6. Fill in the missing info

10. A jar contains cardinal and gold jelly beans,

	PART	PART	WHOLE
RATIO	(Has to be given)	(Has to be given)	Part+Part
MULTIPLIER			
ACTUAL # *(one has to be given)*			

The ratio of gold jelly beans to cardinal jelly beans
Is 5:3. If the jar contains a total of 160 jelly beans,
How many of them are cardinal colored?
A. 30
B. 53
C. 60
D. 100
E. 160

Step 1- Set up a Ratio Box (student version is blank)

	Gold	Cardinal	Total
RATIO	5	3	8
MULTIPLIER	20	20	20
ACTUAL #	100	60	160

Step 2: Enter what you know (Ratio and Actual)

Step 3: Use what you know to find what you don't know (Multiplier). Add it to your box
Step 4:Use the box to find what the problem is asking. (Actual # of Cardinal)

Student Page 21 / Math Slides 13-16

Ratios Practice

**10. A candy jar has yellow, blue, and green candies
in a ratio of 3:2:1 respectively. If the mixture contains
9 yellow candies, how many total candies are in the bowl?**

A. 18
B. 16
C. 15
D. 12
E. 9

Ratios Practice

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A. 18
B. 16
C. 15
D. 12
E. 9

	Yellow	Blue	Green	Total
RATIO	3	2	1	6
MULTIPLIER	3	3	3	3
ACTUAL #	9	6	3	18

Student Page 22

ACT Math Mini Lesson #4-Proportions

Direct Variation is simply a fancy term for a proportion. As one quantity goes up, so does the other.

The formula for direct variation is simple: $X_1/Y_1 = X_2/Y_2$

5. If two packages hold a total of 12 bagels,
how many bagels are in five packages?

A. 12
B. 24
C. 30
D. 36
E. 60

Set up a **Proportion** and **Cross Multiply**:

ACT Math Mini Lesson #4-Proportions

Direct Variation is simply a fancy term for a proportion. As one quantity goes up, so does the other.

The formula for direct variation is simple: $X_1/Y_1 = X_2/Y_2$

5. If two packages hold a total of 12 bagels, how many bagels are in five packages?

A. 12
B. 24
C. 30
D. 36
E. 60

Set up a **Proportion** and **Cross Multiply**:

(2packages)/(12bagels)=(5packages)/(ybagels)
2y=60
y=30 bagels

Teachers' Notes:
After finding the correct answer to this problem, ask students,

"Since the formula for these problems can never change, how could the ACT make proportion problems harder?"

Let students throw out some suggestions, but they will hopefully see the answer to this question after solving the next problem.

Answer: They will make students convert units and trick them on what they actually ask..

Student Page 23 / Math Slides 17

Indirect Variation is the exact opposite of direct variation. As one quantity goes up, the one other goes down.

The formula is the exact opposite of direct variation… $X_1Y_1 = X_2Y_2$

15. The amount of time it takes to consume a buffalo is inversely proportional to the number of coyotes. If it takes 12 coyotes 3 days to consume a buffalo, how many fewer hours will it take if there are 4 more coyotes?

A. ¼
B. ¾
C. 18
D. 24
E. 54

Step 1- Make sure all terms are in the same units. If they aren't, convert them.

Step 2- Plug numbers into indirect variation formula and solve for x.

Step 3- Is x the answer?

Indirect Variation is the exact opposite of direct variation. As one quantity goes up, the one other goes down.

<table>
<tr><td>

</td><td>

The formula is the exact opposite of direct variation… $X_1Y_1 = X_2Y_2$

15. The amount of time it takes to consume a buffalo is inversely proportional to the number of coyotes. If it takes 12 coyotes 3 days to consume a buffalo, how many fewer hours will it take if there are 4 more coyotes?

A. ¼
B. ¾
C. 18
D. 24
E. 54

Step 1- Make sure all terms are in the same units. If they aren't, convert them.
(12coyotes)(72 HOURS)= (16coyotes)(yHOURS)

Step 2- Plug numbers into indirect variation formula and solve for x.
864=16y
y=54 hours

Step 3- Is this the answer?
72 hours (at the start)-54 hours (at the end)=18 FEWER HOURS!

</td></tr>
</table>

Student Page 24 / Math Slides 18-20

Proportions Practice

14. A sports agent's commission varies directly as the size of the contract the agent's player receives. If the player signs for $200,000, the agent receives $14,000. What is the agent's commission if the player signs for $150,000?

A. $7,000
B. $10,500
C. $14,000
D. $15,000
E. $21,000

11. If y varies directly as z^2, and y=4 and z=3, then what is the value of y when z=12?

A. 8
B. 16
C. 36
D. 48
E. 64

Proportions Practice

14. A sports agent's commission varies directly as the size of the contract the agent's player receives. If the player signs for $200,000, the agent receives $14,000. What is the agent's commission if the player signs for $150,000?

A. $7,000
B. $10,500
C. $14,000
D. $15,000
E. $21,000

$(200k/14k)=(150k/y_2)$
Cross multiply and solve....$y_2= 10,500$

11. If y varies directly as z^2, and y=4 and z=3, then what is the value of y when z=12?

A. 8
B. 16
C. 36
D. 48
E. 64

$(4/9)=(y/144)$
Cross multiply and solve...y=64

Student Page 25

ACT Math Mini Lesson #5-Exponents

Exponents are just a simple way of writing multiplication.

When in doubt about exponents, use the rules of MADSPM......

Remember
- A negative number raised to an even power
- becomes positive
- A negative number raised to an odd power stays
- negative
- If you square a positive fraction less than one,
  it gets smaller

MADSPM?

M_____

A_____

Try a few....

2^2 x 2^5=

D_____

r^6/r^2=

S_____

$(y^7)^4$=

P_____

M_____

Example:

15. If $J^6 < J^3$, which of the following could be a value of J?

A. 6
B. 1
C. 0
D. 1/3
E. -1/3

ACT Math Mini Lesson #5-Exponents

Exponents are just a simple way of writing multiplication.

When in doubt about exponents, use the rules of MADSPM......

Remember
- A negative number raised to an even power
- becomes positive
- A negative number raised to an odd power stays
- negative
- If you square a positive fraction less than one,
it gets smaller

Try a few....

2^2 x 2^5 = **2^7**

r^6/r^2 = **r^4**

$(y^7)^4$ = **y^{28}**

MADSPM?

Multiply

Add

Divide

Subtract

Power

Multiply

Example:

15. If $J^6 < J^3$, which of the following could be a value of J?

A. 6
B. 1
C. 0
D. 1/3
E. -1/3

Student Page 26 / Math Slides 21-23

Exponents Practice

4. If the yth term in a sequence is $3x2^y$,
what is the 10th term in the sequence?

A. 60
B. 1,024
C. 1,536
D. 3,072
E. 6,144

18. If $64^{12} = 4^x$, x=?

A. 4
B. 24
C. 36
D. 72
E. 192

Exponents Practice

4. If the yth term in a sequence is $3x2^y$, what is the 10th term in the sequence?

A. 60
B. 1,024
C. 1,536
D. 3,072
E. 6,144

$2^{10} = 1024$
$(1024)(3) = 3,072$

18. If $64^{12} = 4^x$, x=?

A. 4
B. 24
C. 36
D. 72
E. 192

Plug in the answers…
*Remind students to use their calculators for a problem like this
$64^{12} = 4.7223 \times 10^{21}$
$4^{36} = 4.7223 \times 10^{21}$

Student Page 27

Solve percent problems the same way that you solve fraction problems. Percent simply means, "per 100" or "out of 100."

To convert a percentage to a decimal, move the decimal point two places to the left. To convert the other way, just move the decimal two places to the right.

What Percent of What?

The easy way to solve questions like the one below is to remember this simple trick:

$$\frac{\text{Is}}{\text{Of}} = \frac{\text{what \%}}{100}$$

8. If 3/7 of z is 42, what is 5/7 of z?

A. 10
B. 18
C. 45
D. 70
E. 98

Step 1- What is the first thing we need to solve for?

Step 2- What is the value of Z?

Step 3- How should we proceed?

ACT Math Mini Lesson #6-Percents

Solve percent problems the same way that you solve fraction problems. Percent simply means, "per 100" or "out of 100."

To convert a percentage to a decimal, move the decimal point two places to the left. To convert the other way, just move the decimal two places to the right.

We encourage students to solve percent problems by "plugging in their own numbers," a method which is discussed in the next section.

However, sometimes, students cannot use that tactic and must solve using the "percent change" method.

In this case, the is/of method is a bit tricky because instead of a percentage, a fraction is given.

What Percent of What?

The easy way to solve questions like the one below is to remember this simple trick:

$$\frac{Is}{Of} = \frac{what\ \%}{100}$$

8. If 3/7 of z is 42, what is 5/7 of z?

A. 10
B. 18
C. 45

D. 70
E. 98

Step 1- What is the first thing we need to solve for?

z...
42/z=3/7

Step 2- What is the value of Z?

Cross multiply, z=98

Step 3- How should we proceed?

Solve for 5/7 of Z

(5/7)98=70

Student Page 28 / Math Slides 24-25

Percents Practice

1. *The regular price for a certain bicycle is $125.00. If that price is reduced by 20%, what is the new price?*

    A. *$100.00*
    B. *$105.00*
    C. *$112.50*
    D. *$120.00*
    E. *$122.50*

2. *In a group of 25 students, 16 are female. What percentage of the group is female?*

    A. *16%*
    B. *40%*
    C. *60%*
    D. *64%*
    E. *75%*

3. *If 115% of a number is 460, what is 75% of the number?*

    A. *280*
    B. *300*
    C. *320*
    D. *345*
    E. *400*

Percents Practice

1. **The regular price for a certain bicycle is $125.00. If that price is reduced by 20%, what is the new price?**

   A. **$100.00**
   B. $105.00
   C. $112.50
   D. $120.00
   E. $122.50

2. **In a group of 25 students, 16 are female. What percentage of the group is female?**

   A. 16%
   B. 40%
   C. 60%
   D. **64%**
   E. 75%

3. **If 115% of a number is 460, what is 75% of the number?**

   A. 280
   B. **300**
   C. 320
   D. 345
   E. 400

Student Page 29

More Percents Practice

11. Jody is picking a movie to watch this evening. Of the movies in her cabinet, 9 are romantic comedies. She will pick one movie at random. If the probability of the selected movie being a romantic comedy is 25%, how many movies are on the shelf?

A. 9
B. 24
C. 25
D. 36
E. 48

16. A store owner raises the price of a $50 item 20%. After it does not sell, he reduces the price by 20%. What is the final price of the item?

A. $48
B. $49
C. $50
D. $60
E. $100

18. In 1950, the populations of town X and town Y were equal. From 1950-1960, the population of town X increased by 60% and the population of town Y decreased by 60%. In 1960, the population of town Y was what % of the population of town X?

A. 25%
B. 36%
C. 40%
D. 60%
E. 120%

Percents Practice

11. Jody is picking a movie to watch this evening. Of the movies in her cabinet, 9 are romantic comedies. She will pick one movie at random. If the probability of the selected movie being a romantic comedy is 25%, how many movies are on the shelf?

A. 9
B. 24
C. 25
D. 36
E. 48

Use is/of=what%/100 method
9/of=25/100, ***Total movies=36 movies on the shelf***

16. A store owner raises the price of a $50 item 20%. After it does not sell, he reduces the price by 20%. What is the final price of the item?

A. $48
B. $49
C. $50
D. $60
E. $100

(50*1.2)=60, 60*(.8)=48
Students need to remember that percent changes are always a result of the previous change.
The JQP trap answer is $50.

18. In 1950, the populations of town X and town Y were equal. From 1950-1960, the population of town X increased by 60% and the population of town Y decreased by 60%. In 1960, the population of town Y was what % of the population of town X?

A. 25%
B. b. 36%
C. 40%
D. 60%
E. 120%

	Town X	Town Y
1950	100	100
1960	<u>160</u>	<u>40</u>

40/160 = 0.25 = 25%

Student Page 30

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ACT Math Mini Lesson #7-Scientific Notation

Scientific notation was created as a way to express very large or very small numbers without using a long sequence of zeros.

Example:

$2.56 \times 10^{2} = 256$

$2.56 \times 10^{3} = 2,560$

$2.56 \times 10^{-2} = .0256$

$2.56 \times 10^{-1} = .256$

ACT Example:

4. $(8 \times 10^{-3}) - (2 \times 10^{-2})$

A. -.0012
B. -.012
C. .006
D. .028
E. .07

ACT Math Mini Lesson #7-Scientific Notation

Scientific notation was created as a way to express very large or very small numbers without using a long sequence of zeros.

Scientific notation should not be particularly difficult for most students. Further, students can use their graphing calculators to solve these without even knowing the rules.

Example:

$2.56 \times 10^2 = 256$

$2.56 \times 10^3 = 2,560$

$2.56 \times 10^{-2} = .0256$

$2.56 \times 10^{-1} = .256$

ACT Example:

4. $(8x10^{-3}) - (2x10^{-2})$

A. -.0012
B. -.012
C. .006
D. .028
E. .07

Student Page 31 / Math Slides 26

ACT Math Mini Lesson #8-Averages

For the ACT, the average, also called the arithmetic mean, is simply the sum of a set of *n* numbers divided by *n.*

However, just like with many other things, the ACT makes average problems tricky. Thankfully, you will know the easy way to solve any average problem that they could possibly give you.
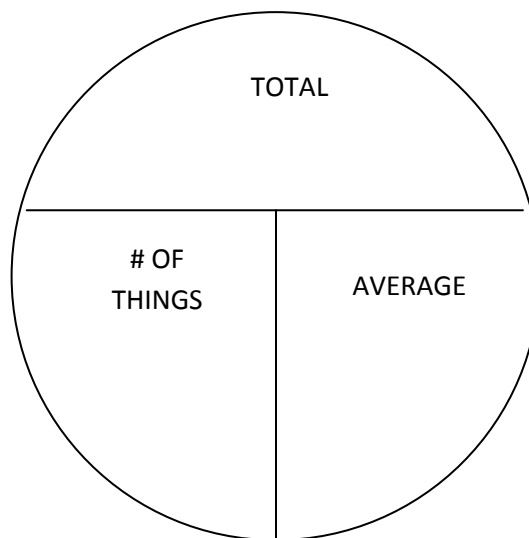
THE AVERGE PIZZA:
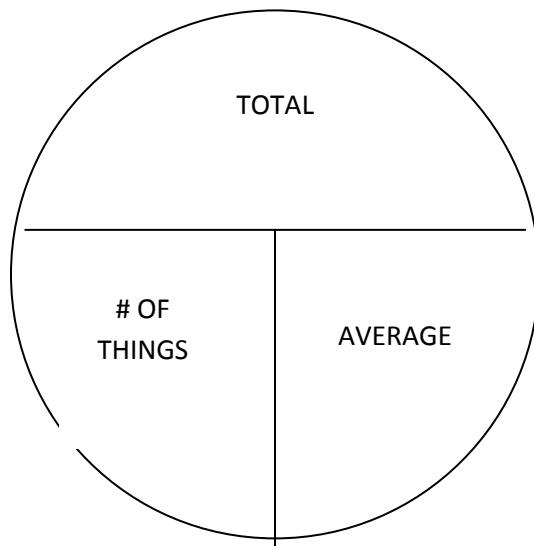
Take a look at a very difficult problem that can be solved with a few pieces of pizza!

> **20. If the average (arithmetic mean) of eight numbers is 20 and the average of five of those numbers is 14, what is the average of the other three numbers?**
>
> **A. 14**
> **B. 17**
> **C. 20**
> **D. 30**
> **E. 36**

ACT Math Mini Lesson #8-Averages

For the ACT, the average, also called the arithmetic mean, is simply the sum of a set of *n* numbers divided by *n*.

However, just like with many other things, the ACT makes average problems tricky. Thankfully, you will know the easy way to solve any average problem that they could possibly give you.

THE AVERGE PIZZA:

The average pizza is a great method to help students avoid complex algebraic steps.

Students should make the following notes in their workbooks:

1. Every time they see a new average, they need to make a new pizza.

2. It will usually take THREE pizzas to solve a problem.

3. Just like eating a real pizza, average question problems should be solved by solving for it one slice at time. Don't try to get to the answer in one step!

TOTAL

OF THINGS

AVERAGE

Take a look at a very difficult problem that can be solved with a few pieces of pizza!

20. If the average (arithmetic mean) of eight numbers is 20 and the average of five of those numbers is 14, what is the average of the other three numbers?
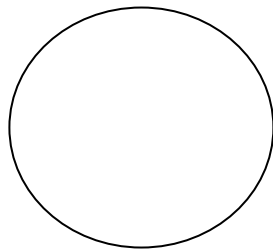
A. 14
B. 17
C. 20
D. 30
E. 36

Student Page 32 / Math Slides 27 - 28

Step 1: Start by making an average pizza for all eight numbers.
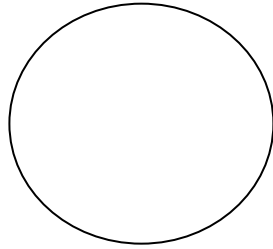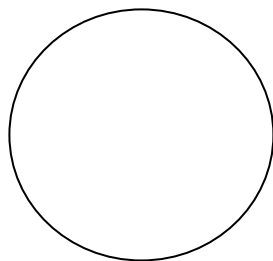
What is the total of those numbers? _____

Step 2-Draw another average pizza for the other five numbers.
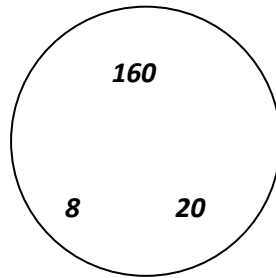
What is the total of those 5 numbers? _____

What else do you need to solve the problem? How do you find it?
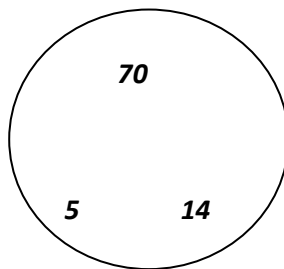
Step 3- Draw an average pizza for the final 3 numbers

The average is _____ and the answer is _____.

Step 1: Start by making an average pizza for all eight numbers.

$$160$$

$$8 \qquad 20$$

What is the total of those numbers? 8*20=160

Step 2-Draw another average pizza for the other five numbers.

$$70$$

$$5 \qquad 14$$

What is the total of those 5 numbers? 5*14=70

What else do you need to solve the problem? How do you find it? **Subtract the totals because they give you all eight numbers, then tell you about five of those numbers, then ask about the other three numbers**

Step 3- Draw an average pizza for the final 3 numbers

$$160-70=90$$

$$3 \qquad 30$$
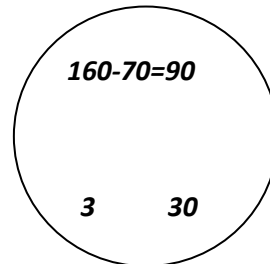
The average is **30** and the answer is **30**.

Student Page 33

After completing this problem, demonstrate to students that ACT average problems give you big pizzas and little pizzas. If they give the big pizza and the little pizza, they'll need to subtract the totals to find the total of the other little pizza. If they give students the two little pizzas, they should add them to find the total of the Big pizza.

Summary (students should take notes)

Big total-Little total =other Little total
Little total + other Little total =Big total

Averages Practice

10. Xena earns $600 every month except for June and February, when she vacations and earns nothing.
What is her average monthly income for the entire year?

A. 275
B. 300
C. 500
D. 600
E. 720

10. The average speed (arithmetic mean) of 10 drivers on the 405 freeway at 6:00pm is 64 miles per hour. What would the 11th driver's speed have to be to bring the average of all 11 drivers to 65 miles per hour?

A. 66
B. 75
C. 85
D. 90
E. 100

Averages Practice

10. Xena ears $600 every month except for June and February, when she vacations and earns nothing.
What is her average monthly income for the entire year?

A. 275
B. 300
C. 500
D. 600
E. 720

600*10 months=$6000/12 months = $500/month

10. The average speed (arithmetic mean) of 10 drivers on the 405 freeway at 6:00pm is 64 miles per hour. What would the 11th driver's speed have to be to bring the average of all 11 drivers to 65 miles per hour?

A. 66
B. 75
C. 85
D. 90
E. 100

64*10 drivers = 640 miles
640 + 75 =715
715/11 = 65 mph

Student Page 34

More Averages Practice

14. *A certain type of notebook costs $2.50 before sales tax is added. When you buy 9 of these notebooks you receive 1 additional notebook free. What is the average cost per notebook for the 10 notebooks before sales tax is added?*

   A. *$2.78*
   B. *$2.50*
   C. *$2.30*
   D. *$2.25*
   E. *$2.15*

15. *In a town of 500 people, the 300 males have an average age of 45 and the 200 females have an average age of 35. To the nearest year, what is the average age of the town's entire population?*

   A. *40*
   B. *41*
   C. *42*
   D. *43*
   E. *44*

16. *The starting team of a baseball club has 9 members who have an average of 12 home runs apiece for the season. The second-string team for the baseball club has 7 members who have an average of 8 home runs apiece for the season. What is the average number of home runs for the starting team and the second-string team combined?*

   A. *7.5*
   B. *8*
   C. *10*
   D. *10.25*
   E. *14.2*

17. *The average of a set of 6 integers is 65. If a seventh number is added to the set, the average of the set increases to 66. What is the seventh number?*

   A. *66*
   B. *67*
   C. *70*
   D. *72*
   E. *78*

14. *A certain type of notebook costs $2.50 before sales tax is added. When you buy 9 of these notebooks you receive 1 additional notebook free. What is the average cost per notebook for the 10 notebooks before sales tax is added?*

     A. *$2.78*
     B. *$2.50*
     C. *$2.30*
     D. $2.25
     E. *$2.15*

15. *In a town of 500 people, the 300 males have an average age of 45 and the 200 females have an average age of 35. To the nearest year, what is the average age of the town's entire population?*

     A. *40*
     B. 41
     C. *42*
     D. *43*
     E. *44*

16. *The starting team of a baseball club has 9 members who have an average of 12 home runs apiece for the season. The second-string team for the baseball club has 7 members who have an average of 8 home runs apiece for the season. What is the average number of home runs for the starting team and the second-string team combined?*

     A. *7.5*
     B. *8*
     C. *10*
     D. 10.25
     E. *14.2*

17. *The average of a set of 6 integers is 65. If a seventh number is added to the set, the average of the set increases to 66. What is the seventh number?*

     A. *66*
     B. *67*
     C. *70*
     D. 72
     E. *78*

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ACT Math Mini Lesson #9-Median and Mode

There will probably be only one question on the ACT that tests your knowledge of median and mode, but because it's an easy concept, it's a question that you should get right.

The **MODE** of a group of numbers is even easier to find. It's simply the number that appears the most. If two numbers tie for the most appearances, that set of data has two modes.

The median of a group of numbers is the middle number, just as on the highway, the median is the divider at the center.

Steps to finding the median:

1. *Put the numbers in order from smallest to largest*
2. *If there is an ODD number of numbers, the middle number is the median*
3. *If there is an even number of numbers, take the average of the two middle numbers.*

Take a look at the following example:

> **10. If the students in Ms. Prater's chemistry class scored 90, 91, 83, 85, and 84 on their midterm exams, what is the Median of her class on this test?**
>
> **A. 90**
> **B. 88**
> **C. 86**
> **D. 85**
> **E. 84**

> **4. What is the median of the first 5 positive odd integers?**
>
> **A. 3**
> **B. 5**
> **C. 7**
> **D. 9**
> **E. 30**

ACT Math Mini Lesson #9-Median and Mode

There will probably be only one question on the ACT that tests your knowledge of median and mode, but because it's an easy concept, it's a question that you should get right.

These questions should not be difficult for most students. However, they can be a bit tricky.

On median questions, the numbers will be not given in ascending or descending order, so students will have to order the numbers correctly in order to find the median.

The **MODE** of a group of numbers is even easier to find. It's simply the number that appears the most. If two numbers tie for the most appearances, that set of data has two modes.

The median of a group of numbers is the middle number, just as on the highway, the median is the divider at the center.

Steps to finding the median:

4. **Put the numbers in order from smallest to largest**
5. **If there is an ODD number of numbers, the middle number is the median**
6. **If there is an even number of numbers, take the average of the two middle numbers.**

Take a look at the following example:

10. If the students in Ms. Prater's chemistry class scored 90, 91, 83, 85, and 84 on their midterm exams, what is the Median of her class on this test?

A. 90
B. 88
C. 86
D. 85
E. 84

4. What is the median of the first 5 positive odd integers?

A. 3
B. 5
C. 7
D. 9
E. 30

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ACT Math Mini Lesson #10-Probability

Probability is the chance that an event will occur. To express the probability of an event you would just count the number of "successes" and count the number of total outcomes and express this as a fraction.

Probability of *x* = _____

12. A bag holds 6 baseballs and 12 other toys. If one item is drawn from the bag at random, what is the probability that the item is a baseball?

A. 1/7
B. 1/3
C. 1/2
D. 2/3
E. 3/7

Step 1- What is a success in this problem? How many successes are there?

Step 2- What is the total number of possible outcomes?

Step 3- What is the probability of a success? (Hint: set up a fraction)

p = _____

ACT Math Mini Lesson #10-Probability

Probability is the chance that an event will occur. To express the probability of an event you would just count the number of "successes" and count the number of total outcomes and express this as a fraction.

Probability of *x* = $\dfrac{(\#\ successes)}{total\ possible\ outcomes}$

12. A bag holds 6 baseballs and 12 other toys. If one item is drawn from the bag at random, what is the probability that the item is a baseball?

A. 1/7
B. 1/3
C. 1/2
D. 2/3
E. 3/7

Step 1- What is a success in this problem? How many successes are there?
success=baseballs, there are 6 of them

Step 2- What is the total number of possible outcomes?
6 baseballs + 12 other toys=18 total outcomes

Step 3- What is the probability of a success? (Hint: set up a fraction)

$$p = \frac{6}{18}$$

Student Page 37 / Math Slides 32-33

Probability Practice

17. A basket contains 6 chocolate and 4 mint candies.
If two candies are drawn at random, what is the probability
that both candies will be chocolate?

A. 2/3
B. 3/5
C. 5/9
D. 1/3
E. 2/15

3. A basket contains 58 red eggs, 78
green eggs, and the rest are blue. if
the probability of choosing a blue egg
from this basket at random is 1/5, how
many blue eggs are in the basket?

A. 34
B. 56
C. 78
D. 102
E. 152

Probability Practice

17. A basket contains 6 chocolate and 4 mint candies.
If two candies are drawn at random, what is the probability
that both candies will be chocolate?

A. 2/3
B. 3/5
C. 5/9
D. 1/3
E. 2/15

Answer: (D). 1st draw= 6/10, 2nd draw= 5 remaining/9 total remaining. Total probability = (6/10)(5/9)=1/3

3. A basket contains 58 red eggs, 78
green eggs, and the rest are blue. if
the probability of choosing a blue egg
from this basket at random is 1/5, how
many blue eggs are in the basket?

A. 34
B. 56
C. 78
D. 102
E. 152

58 + 78 = 136 red and blue…total marbles = 136 + b
b/(136 + b) = 1/5
Cross multiply and solve for b…b = 34

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ACT Math Mini Lesson #11-Permutations/Combinations

Permutations describe the different ways that items can be arranged in a definite order. For example, they may ask how many different five-letter combinations of the word ROCKY can be made or the way six people can be sat at a dinner party.

All permutation questions can be solved quickly using one simple technique. Just make a "seat" for each spot that you have to fill. a sketch might look something like this.

In each seat, write how many different "people" can sit down. Remember that people put into previous seats are unavailable.

17. Kimberly wrote 9 papers for her psychology class. She wants to put 7 papers in her portfolio and is deciding on what order to put them in. How many different ways can Kimberly arrange her papers?

A. 420
B. 5,040
C. 25,920
D. 51,840
E.181,440

Step 1- Set up and Fill in Permutation Seats

__ X __ X __ X __ X __ X __ X __

Hint: How many papers can go first? How many papers can go second?...Think about this for each 'seat'

ACT Math Mini Lesson #11-Permutations/Combinations

Permutations describe the different ways that items can be arranged in a definite order. For example, they may ask how many different five-letter combinations of the word ROCKY can be made or the way six people can be sat at a dinner party.

All permutation questions can be solved quickly using one simple technique. Just make a "seat" for each spot that you have to fill. a sketch might look something like this.

☐ ☐ ☐ ☐ ☐ ☐

In each seat, write how many different "people" can sit down. Remember that people put into previous seats are unavailable.

Students are often intimidated by these questions and think they must be more complex than they actually are. In high school classes, these questions are often solved using nCr and nPr on the graphing calculator, or with complex formulas.

For the purposes of the ACT, the "chair method" is the easiest way to solve these questions. Encourage students to:

1. Figure out the number of chairs at the table

2. Understand how many people could possibly sit in each chair

3. "Seat" VIP's first, and then fill all seats

4. Multiply across

17. Kimberly wrote 9 papers for her psychology class. She wants to put 7 papers in her portfolio and is deciding on what order to put them in. How many different ways can Kimberly arrange her papers?

A. 420
B. 5,040
C. 25,920
D. 51,840
E.181,440

Step 1- Set up and Fill in Permutation Seats

 9 x 8 x 7 x 6 x 5 x 4   x 3

Hint: How many papers can go first? How many papers can go second...Think about this for each 'seat'

Student Page 39 / Math Slides 34-35

Permutations/Combinations Practice

19. In a three digit number, all of the digits are different and the units and hundreds digits are prime. How many possible numbers can be made?

A. 64
B. 96
C. 128
D. 240
E. 504

15. There are 5 swimmers in a race. If the first place finisher wins a gold medal, the second place finisher wins a silver medal and the third place finisher wins a bronze medal, how many different permutations are possible for the medal winners?

A. 5
B. 12
C. 20
D. 50
E. 60

Permutations/Combinations Practice

19. In a three digit number, all of the digits are different and the units and hundreds digits are prime. How many possible numbers can be made?

A. 64
B. 96
C. 128
D. 240
E. 504

Answer: 96. Set up three chairs. Start by figuring out how many digits there are (10) 0-9. We suggest students list them all so that they can cross of the ones that they "use." Next, students must know how many of those digits are prime (4 of them-2,3,5,7).

That means 4 numbers can go in the hundreds spot, three can go in the units spot because one prime will have been used, and there are 8 remaining possible digits for the tens spot. The answer is 4*8*3 = 96

15. There are 5 swimmers in a race. If the first place finisher wins a gold medal, the second place finisher wins a silver medal and the third place finisher wins a bronze medal, how many different permutations are possible for the medal winners?

A. 5
B. 12
C. 20
D. 50
E. 60

Answer: 60. Set up three chairs. There are 5 swimmers who can win gold. Once one swimmer has won gold, 4 swimmers race for silver, and finally 3 swimmers race for bronze.
The answer is 5*4*3 = 60

Student Page 40

ACT Math Fundamentals Notes:

How can the number of the problem help me find the type of answer that the ACT is looking for?

_____
_____

What are the toughest "fundamentals problems for me to solve?

_____
_____

How do I use the ratio box and average pizza?

_____
_____

What types of problems can the "chair method" help me solve?

_____
_____

ACT Math Fundamentals Notes:

How can the number of the problem help me find the type of answer that the ACT is looking for?

_____
_____

What are the toughest "fundamentals problems for me to solve?

_____
_____

How do I use the ratio box and average pizza?

_____
_____

What types of problems can the "chair method" help me solve?

_____
_____

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Further Practice (Teachers Edition Only)

The following chart outlines the segmentation of the ACT released exam, and displays the problems that are categorized as ACT fundamentals.

Problem Type	ACT Practice Test #1`	ACT Practice Test #2	ACT Practice Test #3
Functions	Section 2 #'s 30,32	Section 2 #'s 33,38	Section 2 #'s 5,11,19
Percents:	Section 2 #'s 7,13,14	Section 2 #'s 47,53,57,59	Section 2 #'s 2 42-44
Proportions, ratios, averages	Section 2 #'s 3,16,18,33,40,47	Section 2 #'s 7,19	Section 2 #'s 3,51
Exponents and Logs		Section 2 #'s 60	Section 2 #'s 49
Misc (median, permutations, probability, abs value, basic algebra, computations)	Section 2: #'s 1,2,11,27,28,42,51	Section 2 #'s 2,3,8,10,15,21,24,27,28,34,35,39,41,51	Section 2 #'s 1,4,7,14,21,39

THE BEST MATH TACTICS IN THE HISTORY OF HUMAN CIVILIZATION!

Best Math Tactics #1

- Plug In Your Own Number (Plugging In)

What's So Great about this tactic anyway?

Plugging-In our own number allows us to avoid using **ALGEBRA** to solve ACT math problems. Algebra works great when you are in math class and you have to solve each problem by showing work for each step in order to get full credit.

On the ACT, the only thing Algebra is good for is for confusing us and causing us to make stupid mistakes! Remember, you DON'T get extra points on the ACT for doing the problem "the right way." As long as you find the answer, the ACT NEVER asks HOW!!

THE BEST MATH TACTICS IN THE HISTORY OF HUMAN CIVILIZATION!

Best Math Tactics #1

- Plug In Your Own Number (Plugging In)

If teachers only focus in one area of the ACT math section, these tactics should be that area.

Avoiding algebra exists to help students turn complex algebra problems into problems that their calculators can solve.

Students NEED to understand the steps to these tactics, and equally important, they need to understand WHEN to use these methods!

Because the ACT doesn't require students to solve problems the "right" way, their goal should simply be to solve the problems as quickly as possible.

 LESS ALGEBRA=LESS TIME AND LESS MISTAKES!

What's So Great about these tactics anyway?

These tactics are found in almost every ACT Math book out there! However, the *Barron's, Sparknotes* and *Princeton Review* books take dozens of pages to explain them! We give you the best parts of all these books, condensed in a few easy to understand pages!

Plugging-In allow us to avoid using **ALGEBRA** to solve ACT math problems. Algebra works great when you are in math class and you have to solve each problem by showing work for each step in order to get full credit.

On the ACT, the only thing Algebra is good for is for confusing us and causing us to make stupid mistakes! Remember, you DON'T get extra points on the ACT for doing the problem "the right way." As long as you find the answer, the ACT NEVER asks HOW!!

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BEST MATH TACTIC EVER #1

PLUGGING IN YOUR OWN NUMBER!
Plugging-In allows us to take complicated Algebra problems and convert them to simple arithmetic problems.

When do I Plug-In My Number?
Whenever possible! Look for **VARIABLES in the PROBLEM and the ANSWER choices**. Look for words such as "**In terms of**"

Steps to Plugging In your own number:
    Step 1-
_____
_____
_____

    Step 2-
_____
_____
_____

    Step 3-
_____
_____
_____

    Step 4-
_____
_____
_____

BEST MATH TACTIC EVER #1

PLUGGING IN YOUR OWN NUMBER!
Plugging-In allows us to take complicated Algebra problems and convert them to simple arithmetic problems.

Typically it is much easier for students to indentify when to plug in their own numbers than to plug in the answer choices.

If they see VARIABLES IN THE QUESTION AND THE ANSWER CHOICES, students should plug in their number!

Students need to make sure they are clear on which numbers they created, and which number represents the answer that they found.

It can happen where more than one answer works, if this happens, instruct students to plug in something different.

When do I Plug-In My Number?

Whenever possible! Look for **VARIABLES in the PROBLEM and the ANSWER choices**. Look for words such as "**In terms of**"

Steps to Plugging In your own number (BLANK FOR STUDENTS):

Step 1-
Cross out the variables and choose numbers to represent each variable. Make sure you know what number each variable represents

Step 2-
Solve the problem using the numbers that you chose.

Step 3-
Write down the answer you found, and circle it! This is your TARGET.

Step 4-
Plug in your chosen numbers into the variables in each answer choice. Make sure to check them all, and look to find your TARGET. When only one choice matches, you know you have found the answer.

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Plugging-In Tips:

1. **Watch out for Zero and One**:
   These numbers often lead to more than one answer seeming correct—we don't recommend plugging in either

2. **Don't use the same number for multiple variables**
   Again, this leads to multiple answers seeming to be correct

3. **Remember to check all your answers before moving on**
   Because certain numbers can result in multiple correct answers, make sure to check all answers before moving on. If you find more than one correct answer, don't worry. Choose new numbers and plug in again!

4. **Pick "Good" Numbers**
   Choose numbers that make the problem as easy as possible. For example, if the problem deals with percents or money, 100 is probably the easiest number to start with. However if the problem has to do with time, numbers such as 60 (seconds to minutes or minutes to hours)

5. **Mark your test book with the numbers you choose**
   For example, if you choose 10 for z and 100 for s, cross out the variables and reread the problem with those numbers. When you find the answer (your Target), circle it so you don't forget it!

Plugging-In Tips:

1. **Watch out for Zero and One**:
   These numbers often lead to more than one answer seeming correct

2. **Don't use the same number for multiple variables**
   Again, this leads to multiple answers seeming to be correct

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5. **Mark your test book with the numbers you choose**
   For example, if you choose 10 for z and 100 for s, cross out the variables and reread the problem with those numbers. When you find the answer (your Target), circle it so you don't forget it!

These tips should be reviewed through the course of completing the problems in this section. Most of these tips will become relatively obvious to students as they complete the practice problems.

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Here's a moderately difficult problem that becomes very easy when you Plug in:

12. *If a store sells a shirt for h dollars,*
how much would that shirt cost if
it was marked down by q%

A. *hq*
B. *1/4hq*
C. *h(1-(q/100)*
D. *q(1-(h/100)*
E. *2hq*

Step 1- Plug your own numbers in for h and q
h=
q-

Step 2- Solve the problem using your numbers.

Step 3-
    Target:_____

Step 4- Plug your numbers back into the answer choices and find the choice that matches your
target.

Try another:

13. *If w hats cost z dollars,*
then how many hats could
you buy with $100?

A. *100/w*
B. *100wz*
C. *100w/z*
D. *100z/w*
E. *wz*

Follow the same steps that you used on the first problem. What do you do if more than one
answer choice works? Read the next section to find out!

Here's a moderately difficult problem that becomes very easy when you Plug in:

12. *If a store sells a shirt for h dollars, how much would that shirt cost if it was marked down by q%*

    A. hq
    B. 1/4hq
    C. h(1-(q/100)
    D. q(1-(h/100)
    E. 2hq

Step 1- Plug your own numbers in for h and q
h=100
q-10%

Step 2- Solve the problem using your numbers.
100-100(.10)=$90

    Target: **$90**

Step 3- Plug your numbers back into the answer choices and find the choice that matches your target.
Only (C) should work if those numbers are chosen.

Try another:

13. *If w hats cost z dollars, then how many hats could you buy with $100?*

A. 100/w
B. 100wz
C. 100w/z
D. 100z/w
E. wz

Follow the same steps that you used on the first problem. What do you do if more than one answer choice works? Read the next section to find out!

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More Practice with Plugging-In:

> **16. If the sum of three consecutive odd integers is p, then in terms of p, what is the greatest of the three integers?**
>
> **A. (p-6)/3**
> **B. (p-3)/3**
> **C. p/3**
> **D. (p+3)/3**
> **E. (p+6)/3**

Think about choosing easy numbers so that the math will work out as quickly as possible!

Step 1- Plug your own number in for p
    Hint: find three consecutive odd integers first

Step 2- Solve the problem using your numbers.

Step 3-Target:_____

Step 4- Plug your numbers back into the answer choices and find the choice that matches your target.

More Practice with Plugging-In:

> **16. If the sum of three consecutive odd**
> **integers is p, then in terms of p,**
> **what is the greatest of the three integers?**
>
> *A. (p-6)/3*
> *B. (p-3)/3*
> *C. p/3*
> *D. (p+3)/3*
> **E. (p+6)/3**

Think about choosing easy numbers so that the math will work out as quickly as possible!

Step 1- Plug your own number in for p
1,3,5
p=1+3+5=9

Step 2- Solve the problem using your numbers.

> **Step 3-Target: 5**

Step 4- Plug your numbers back into the answer choices and find the choice that matches your target.
Only (E) should work

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ACT Math Mini Lesson #13-Plugging In Our Own Numbers Practice

Again, think about numbers that will make the math on this problem easy…

**12. Andrew flies 40 miles in x hours.
If he must fly y miles at the same
speed, in terms of x and y, how
many hours will the trip take?**

A. x/(40y)
B. 40/(xy)
C. 40xy
D. (40y)/x
E. (xy)/40

**16. If g ≠ 0, which of the
following must be true?**

  I. $g^2 > g$
  II. 5g > g
  III. g + 2 >g

A. I only
B. II only
C. III only
D. I & III only
E. I, II, III

**18. At a large bakery, sacks of flour are filled by
a machine that weighs each sack to be sure
that it holds between 29.75 and 30.25 pounds
of flour. Only then is the pack sealed and shipped.
If a sack holding j pounds of flour is shipped,
which of the following describes all possible
values of j?**

A. |j - 30|> 1/4
B. |j + 30|= 1/4
C. |j - 30| = 1/4
D. |j + 30|< 1/4
E. |j - 30| < 1/4

Hint: *What is the easiest number to plug in on this problem?*

12. Andrew flies 40 miles in x hours.
If he must fly y miles at the same
speed, in terms of x and y, how
many hours will the trip take?

A. x/(40y)
B. 40/(xy)
C. 40xy
D. (40y)/x
E. (xy)/40

16. If g ≠ 0, which of the
following must be true?

    I. $g^2 > g$
    II. 5g > g
    III. g + 2 >g

A. I only
B. II only
C. III only
D. I & III only
E. I, II, III

18. At a large bakery, sacks of flour are filled by
a machine that weighs each sack to be sure
that it holds between 29.75 and 30.25 pounds
of flour. Only then is the pack sealed and shipped.
If a sack holding j pounds of flour is shipped,
which of the following describes all possible
values of j?

A. |j - 30|> 1/4
B. |j + 30|= 1/4
C. |j - 30| = 1/4
D. |j + 30|< 1/4
E. |j - 30| < 1/4

Hint: *What is the easiest number to plug in on this problem*?   **Student Page 47**

PLUG IN THE ANSWER Choices!

This tactic allows us to work the problem backwards to solve easy questions quickly and to turn difficult questions into easy ones!

When do I use the Answer Choices to solve the problem backwards?

When there are numbers in the answer choices or you feel the strong urge to write out a long algebraic expression! (Ex: age problems)

> **Step 1-**
> _____
> _____
> _____
>
> **Step 2-**
> _____
> _____
> _____
>
> **Step 3-**
> _____
> _____
> _____
>
> **Step 4-**
> _____
> _____
> _____

This tactic is quite possibly the most important and useful tactic in this book.

However, the difficulty for many students is identifying the problems where this tactic can be used.

One suggested drill that we recommend is for students to go through a sample math section and simply identify the problems that they can either plug in the answers or plug in their own numbers.

If students can gain proficiency and expertise in applying these topics, they will gain immense confidence in their ACT math abilities!

Students always want to skip step 1! Labeling the answers simply means labeling what the answer choices actually represent. (AKA what the question asks for)

Starting with (C) saves a lot of time because if (C) is correct, the student is done; and if it's now correct, the student will be able to eliminate at least three answers, depending on whether (C) is too large or too small.

Unlike when students plug in their own numbers where they create their own "target" answer, in these problems, the target appears in the question.

PITA = PLUG IN THE ANSWERS!

PITA allows us to work the problem backwards to solve easy questions quickly and to turn difficult questions into easy ones!

When do I use PITA?
**When there are numbers in the answer choices or you feel the strong urge to write out a long algebraic expression!
(Ex: age problems)**

(BLANK FOR STUDENTS)

Step 1-
Label the answer choices so that you know what they represent.

Step 2-
Start with answer choice (C) and work the steps of the problem backwards. Always start with (C) because it will either be the answer, or eliminate three answers if it is too big or too small.

Step 3-
Look for something in the problem that tells you that you are correct. Think of this as a REVERSE TARGET.

Step 4-
When you find the correct answer STOP. You do not need to check all answers because only one can work.

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PRACTICE WITH Plugging in the Answer Choices:
>   **Note:** *If a question asks for a specific amount, Plug In the Answer Choices!*

>   **11. Marc is half as old as Tony and three times as old as Ben. If the sum of their ages is 40, how old is Marc?**
>
>   **A. 3**
>   **B. 6**
>   **C. 12**
>   **D. 18**
>   **E. 24**

Step 1-Label the answer choices: What are the answers telling us?

Step 2-How many columns will we need to label?

Step 3-Where should we start? With (C) of course!

Marc's Age (answers)	Tony's Age (Marc * __)	Ben's Age (Marc / ___)	Sum
A. 3			
B. 6			
Start here! C. 12			
D. 18			
E. 24			

Unlike when Plugging-In your own numbers, when we use PITA we DO NOT need to test all the answers after we have found one that satisfies all the conditions.

Remember, when you find the CORRECT ANSWER, then STOP and move on!

PRACTICE WITH Plugging in the Answer Choices:
Note: *If a question asks for a specific amount, Plug In the Answer Choices!*

11. Marc is half as old as Tony and three times as old as Ben. If the sum of their ages is 40, how old is Marc?

A.3
B.6
C.12
D. 18
E. 24

Ensure that students do not skip step one, because labeling the columns correctly is what will guide them to the correct answer. The following chart below displays how this problem should be set up.

Step 1-Label the answer choices: What are the answers telling us?
Students should have three columns as displayed below (Marc, Tony, and Ben)

Step 2-How many columns will we need to label?
Three, one for each person, and we are looking for a column that adds up to 40!

Step 3-Where should we start? With (C) of course!

Marc's Age (answers)	Tony's Age (Marc * 2)	Ben's Age (Marc / 3)	Sum
A. 3			40
B. 6			40
Start here! C. 12	24	4	40
D. 18			40
E. 24			40

Unlike when Plugging-In your own numbers, when we use PITA we DO NOT need to test all the answers after we have found one that satisfies all the conditions.

Remember, when you find the CORRECT ANSWER, then STOP and move on!

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37. Chef Emeril has equal amounts flour, sugar and salt. He made pretzels by mixing 1/3 of the flour, ½ of the sugar and ¼ of the salt. If he made 52 pounds of pretzels, how many pounds of sugar did he have to start?

A. 45
B. 48
C. 50
D. 52
E. 56

Step 1- Are there any trap answers?

Step 2- Label the remaining answer choices

Answers represent: _____

A. 45
B. 48
C. 50

E. 56

Step 3: Start with (C) and work the steps backwards:

37. Chef Emeril has equal amounts flour, sugar and salt. He made pretzels by mixing 1/3 of the flour, ½ of the sugar and ¼ of the salt. If he made 52 pounds of pretzels, how many pounds of sugar did he have to start?

A. 45
B. 48
C. 50
D. 52
E. 56

Step 1- Are there any trap answers?

(D) Because this is a hard question, a number repeated from the question in the answer is always wrong.

Step 2- Label the remaining answer choices

Pounds of Sugar (salt, and flour as well because the problem says we start we equal amounts of each):

A. 45

B. 48

C. 50

E. 56

Step 3: Start with (C) and work the steps backwards:

Since we know that we start with the same amounts of all three ingredients, we solve for how much of each ingredient was actually used.

Flour (1/3 used)	*Sugar(1/2 used)*	*Salt(1/4 used)*
Starting lbs:50	Starting lbs:50	Starting lbs:50
50/3= **16.667** (used lbs.)	50/2=**25**(used lbs.)	50/4=**12.5**(used lbs.)

Does this add up to what we are looking for? (52 pounds of pretzels)…
16.667+25+12.5=More than 52!

Let's try plugging in (B):

Flour (1/3 used)	*Sugar(1/2 used)*	*Salt(1/4 used)*
Starting lbs:48	Starting lbs:48	Starting lbs:48
48/3= **16** (used lbs.)	48/2=**24**(used lbs.)	48/4=**12** (used lbs.)

Is this what we are looking for?
16+24+12=52   **Student Page 50 / Math Slides 46**

6. Serena gives her butler a satin suit and her driver a diamond necklace. If the suit is worth one-fifth of what the necklace is worth, and if the two items together are worth $4800, how much is the necklace worth?

A. $800
B. $960
C. $3840
D. $4000
E. $4250

7. Jason has twice as many baseballs as Matt. If Jason gives Matt three baseballs, Jason would have one baseball less than Matt. How many baseballs does Jason currently have?

A. 4
B. 5
C. 7
D. 8
E. 10

12. A private plane pilot flies her plane for two days. The distance she flew on the first day was 150 km less than twice the distance she flew on the second day. If she flew a total of 600 km, what was the distance she flew, in km that she flew on the second day?

A. 250
B. 275
C. 350
D. 375
E. 450

13. If (q-6)(q-6) = 169, then one Possible value of q is?

A. √7
B. √13
C. 7
D. 19
E. 49

ACT Math Mini Lesson #15-More Practice with Plugging in the Answer Choices

*6. Serena gives her butler a satin suit and her
driver a diamond necklace. If the suit is worth
one-fifth of what the necklace is worth, and if
the two items together are worth $4800,
how much is the necklace worth?*

<u>*Necklace*</u>   <u>*suit*</u>
A. $800
B. $960
C. $3840
D. $4000   *800*   *4000/5=800*
E. $4250

*7. Jason has twice as many baseballs as Matt. If
Jason gives Matt three baseballs, Jason would
have one baseball less than Matt. How many
baseballs does Jason currently have?*

<u>*J @ Start*</u>   <u>*M @start*</u>   <u>*J @ end*</u>   <u>*M @end*</u>
A. 4
B. 5
C. 7
D. 8
E. 10   *5*   *7*   *8*

*12. A private plane pilot flies her plane for two days.
The distance she flew on the first day was 150 km less
than twice the distance she flew on the second day.
If she flew a total of 600 km, what was the distance she
flew, in km on the second day?*

<u>*2ⁿᵈ Day*</u>   <u>*1ˢᵗ Day*</u>
A. 250   *350*   *350 = (250*2) - 150*
B. 275
C. 350
D. 375
E. 450

13. If (q-6)(q-6) = 169, then one Possible value of q is?

A. √7
B. √13
C. 7
D. 19   (19-6)(19-6) = 169
E. 49   **Student Page 51**

*8. If the average (arithmetic mean) of g
an q is 20, then the average of (g+7) and
(q+17) is?*

A. 21
B. 22
C. 30
D. 32
E. 37

*9. A number h, is increased by 5 and
the result is multiplied by 5. The
result is decreased by 5. Finally, that
number is divided by 5. In terms of h,
what is the final result?*

A. h-5
B. h-1
C. h
D. h+4
E. 5(h+5)

*9. If it costs w dollars to buy v tacos,
how much will it cost, in dollars, to
buy g tacos at the same rate?*

A. (wg)/v
B. g/(wv)
C. (vg)/w
D. (wv)/g
E. wvg

8. If the average (arithmetic mean) of g an q is 20, then the average of (g+7) and (q+17) is?

A. 21
B. 22
C. 30
D. 32
E. 37

Answer: Plug in 20 for both g and q.

9. A number h, is increased by 5 and the result is multiplied by 5. The result is decreased by 5. Finally, that number is divided by 5. In terms of h, what is the final result?

A. h-5
B. h-1
C. h
D. h+4
E. 5(h+5)

Answer: Plug in a small number, like 2 or 5, and work the steps of the problem

9. If it costs w dollars to buy v tacos, how much will it cost, in dollars, to buy g tacos at the same rate?

A. (wg)/v
B. g/(wv)
C. (vg)/w
D. (wv)/g
E. wvg

Answer: Plug in easy numbers such as w=$2, v=3 tacos, g=9 tacos

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14. A group of travelers are equally sharing the $30 cost of a taxi to dinner. If an additional person joins the party, each person will owe $1 less. How many people are currently in the group?

A. 15
B. 12
C. 10
D. 6
E. 5

7. Let c be an integer greater than 1, let f= the average (arithmetic mean) of the integers from 1 to c. Let g = the average (arithmetic mean) of the integers from o to c. which of the following can be true?
I. f = g   II. f<g   III. f>g

A. I only
B. II only
C. III only
D. II & III only
E. I, II & III

12. 160 students went on a trip to Washington D.C. If there were 28 more girls than boys on the trip, how many boys went on the trip?

A. 52
B. 66
C. 80
D. 94
E. 132

14. A group of travelers are equally sharing the $30 cost of a taxi to dinner. If an additional person joins the party, each person will owe $1 less. How many people are currently in the group?

People @ start	$/person	people @ end	$/person
A. 15			
B. 12			
C. 10			
D. 6			
E. 5	**$6**	**6**	**$5**

7. Let c be an integer greater than 1, let f= the average (arithmetic mean) of the integers from 1 to c. Let g = the average (arithmetic mean) of the integers from o to c. which of the following can be true?
I. f = g   II. f<g   III. f>g

A. I only
B. II only
C. III only
D. II & III only
E. I, II & III

Answer: Plug in c=2, f=1.5, g=1

12. 160 students went on a trip to Washington D.C. If there were 28 more girls than boys on the trip, how many boys went on the trip?

Boys	Girls	Difference
A. 52		
B. 66	**160-66=94**	**94-66=28**
C. 80		
D. 94		
E. 132		

Student Page 53

16. Which of the following calculations
will yield an odd integer for any integer x?

    A. x^2
    B. $3x^2$
    C. $2x^2 + 1$
    D. $3x^2 + 1$
    E. $5x^2$

20. If $a < -1$, which of the following best describes
a general relationship between a^3 and a^2?

    A. $a^3 > a^2$
    B. $a^3 < a^2$
    C. $a^3 = a^2$
    D. $a^3 = -a^2$
    E. $a^3 = \dfrac{1}{a^2}$

24. What is the product of n and m^2, where n is an
odd number and m is an even number?

    A. An odd number
    B. A multiple of four
    C. A non-integer
    D. An irrational number
    E. The square of an integer

30. If the sum of five consecutive even integers
is equal to their product, what is the greatest of
the five integers?

    A. 4
    B. 10
    C. 14
    D. 16
    E. 20

16. Which of the following calculations will yield an odd integer for any integer x?

    A. x^2
    B. $3x^2$
    C. $2x^2 + 1$
    D. $3x^2 + 1$
    E. $5x^2$

Answer: Plug in a positive number for x, then try a negative number of x

20. If $a < -1$, which of the following best describes a general relationship between a^3 and a^2?

    A. $a^3 > a^2$
    B. $a^3 < a^2$
    C. $a^3 = a^2$
    D. $a^3 = -a^2$
    E. $a^3 = \dfrac{1}{a^2}$

Answer: Plug in a=-2

24. What is the product of n and m^2, where n is an odd number and m is an even number?

    A. An odd number
    B. A multiple of four
    C. A non-integer
    D. An irrational number
    E. The square of an integer

Answer: plug in m=2 and n=3

30. If the sum of five consecutive even integers is equal to their product, what is the greatest of the five integers?

    Greatest

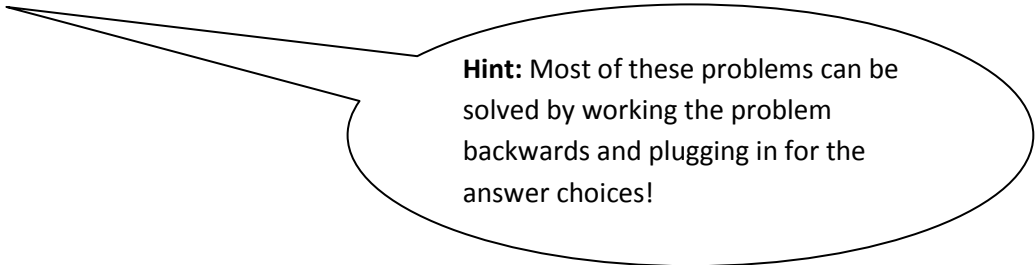|					
A. 4	2	0	-2	-4	sum=0 product=0
B. 10					
C. 14					
D. 16					
E. 20					

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ACT Math Mini Lesson #18-ACT Quadratics

The ACT loves to test students on three specific quadratic equations. Make sure you can spot them, so that you can save time in factoring and such.

1.

2.

3.

Hint: Most of these problems can be solved by working the problem backwards and plugging in for the answer choices!

The ACT loves to test students on three specific quadratic equations. Make sure you can spot them, so that you can save time in factoring and such.

1. $x^2 - y^2 = (x+y)(x-y)$

2. $(x+y)^2 = x^2 + 2xy + y^2$

3. $(x-y)^2 = x^2 - 2xy + y^2$

Hint: Most of these problems can be solved by working the problem backwards and plugging in for the answer choices!
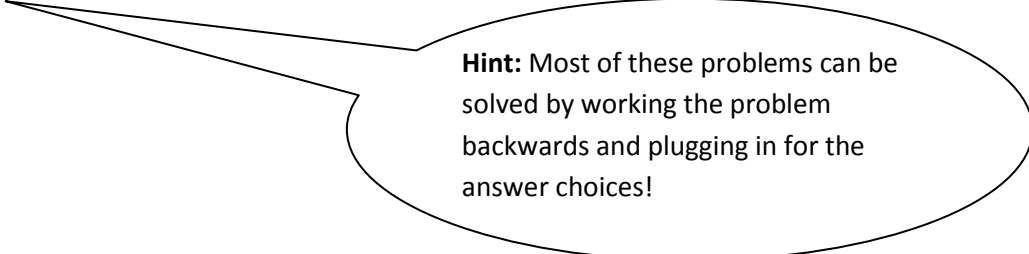
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ACT Math Mini Lesson #19-Functions

Treat functions like you're reading directions on a map. Follow them, and you'll end up at your destination.

Most function questions will give you a specific value to plug in for x or a given variable, and ask you the value of the function for the given variable.

6. If $f(x) = x^2 + 2x -3$ $f(5)=$

A. 12
B. 17
C. 32
D. 35
E. 38

12. Leonard's band charges by performance. Leonard's share H, in dollars, for performance y is given by the function $H(y) = 12y-6$. If Leonard earned $42 playing for the band during the month of October, how many performances did the band give?

A. 3
B. 4
C. 5
D. 6
E. 7

ACT Math Mini Lesson #19-Functions

Treat functions like you're reading directions on a map. Follow them, and you'll end up at your destination.

Most function questions will give you a specific value to plug in for x or a given variable, and ask you the value of the function for the given variable.

6. If $f(x) = x^2 + 2x -3$ $f(5)=$

A. 12
B. 17
C. 32
D. 35
E. 38

Students often get confused on how to start these questions….

It's important to review with students that f(x) simply represents y and x represents x in the (x, y) coordinate plane.

12. Leonard's band charges by performance. Leonard's share H, in dollars, for performance y is given by the function H(y) =12y-6. If Leonard earned $42 playing for the band during the month of October, how many performances did the band give?

A.   3
B. 4
C. 5
D. 6
E. 7

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Avoiding Algebra Summary

Avoiding Algebra Notes:

Why does algebra suck on the ACT?

_____
_____

What in the problem tells me I can plug in my own number?

_____
_____

What in the problem tells me I can plug in the answer choices?

_____
_____

Avoiding Algebra Summary

Avoiding Algebra Notes:

Why does algebra suck on the ACT?

_____
_____

What in the problem tells me I can plug in my own number?

_____
_____

What in the problem tells me I can plug in the answer choices?

_____
_____

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Further Practice (Teachers Edition Only)

The following chart outlines the segmentation of algebra problems on the ACT released exams and displays the problems that students can plug in the answer choices and plug in their own numbers. Students should practice not only completing these problems, but also <u>identifying when to use these methods.</u>

QUESTION TYPE	ACT Practice Test #1	ACT Practice Test #2	ACT Practice Test #3
Plugging in your own numbers	Section 2 #'s 4,6,22,24,35,46,58	Section 2 #'s 1,4,6,11,17,20,23,52,58	Section 2 #'s 8,9,10,15,18,27,33,53,54,59
Plugging in the answer choices	Section 2 #'s 8,17,19,20,21,26,36,45,49,60	Section 2 #'s 5,13,22,36,42,48,49	Section 2 #'s 22,28,29,30,41,47
Functions	Section 2 #'s 30,32	Section 2 #'s 33,38	Section 2 #'s 5,11,19

ACT Math Mini Lesson #20-Logarithms

Logarithm questions are not super common on ACT, but it wouldn't be out of the question for one to appear.

Think of log questions as simply another way to deal with exponents, and the way that they could be tested on the ACT is not very difficult.

The Logarithm Formula

$$\mathbf{log_x y = z} \text{ simply means } \mathbf{x^z = y}$$

For example:

$4^2 = 16$ means $\log_4 16 = 2$

ACT Example:

33. If $\log_x 64 = 6$, what is the value of x?

A. 2
B. 3
C. 4
D. 5
E. 6

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The Logarithm Formula

$$\log_x y = z \text{ simply means } x^z = y$$

For example:

$4^2 = 16$ means $\log_4 16 = 2$

ACT Example:

33. If $\log_x 64 = 6$, what is the value of x?

A. 2
B. 3
C. 4
D. 5
E. 6

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Logarithms Practice

1. **What is the value of $\log_3 27$?**

   A. 3
   B. 9
   C. $\frac{1}{3}$
   D. $\frac{1}{9}$
   E. 24

2. **What is the value of $\log_2 \frac{1}{8}$?**

   A. $\frac{1}{3}$
   B. $\frac{-1}{3}$
   C. $\frac{1}{4}$
   D. -3
   E. 3

3. **Which of the following is a value of x that satisfies $\log_x 36 = 2$?**

   A. 4
   B. 6
   C. 8
   D. 16
   E. 18

4. **If $\log_x 32 = 5$, what is the value of x ?**

   A. 1
   B. 2
   C. 5
   D. 6.4
   E. 27

5. **If $\log_x 64 = 2$, then $x = $?**

   A. 2
   B. 4
   C. 8
   D. 16
   E. 64^2

Logarithms Practice

1. **What is the value of $\log_3 27$?**

    a. 3
    b. 9
    c. $\frac{1}{3}$
    d. $\frac{1}{9}$
    e. 24

2. **What is the value of $\log_2 \frac{1}{8}$?**

    A. $\frac{1}{3}$
    B. $\frac{-1}{3}$
    C. $\frac{1}{4}$
    D. -3
    E. 3

3. **Which of the following is a value of x that satisfies $\log_x 36 = 2$?**

    A. 4
    B. **6**
    C. 8
    D. 16
    E. 18

4. **If $\log_x 32 = 5$, what is the value of x ?**

    A. 1
    B. **2**
    C. 5
    D. 6.4
    E. 27

5. **If $\log_x 64 = 2$, then $x = $?**

    A. 2
    B. 4
    C. **8**
    D. 16
    E. 64^2

ACT Math Mini Lesson #21-Plane Geometry Introduction

Geometry Facts Revealed:

o When you find a geometry problem, see if you can solve it with a logical guess before you actually try to figure it out

o Be familiar with the size of common angles

o ***Most shapes will be drawn to scale - use your eyes to eliminate illogical answers***

o When a diagram is not given or is not drawn to scale, redraw it

o ***Fill in any missing info in the figure before solving the problem***

Plane Geometry Formulas

Area of a triangle =

Pythagorean theorem =

30-60-90 Triangles =

45-45-90 Triangles =

Area of a circle=

Circumference of a circle=

Area of square/rectangle=

Area of a trapezoid =

ACT Math Mini Lesson #21-Plane Geometry Introduction

Solving problems on ACT geometry often means using logic, and filling in pictures until a student finds the correct answer.

The ACT does not promise that all pictures are drawn to scale, but we have not seen one yet that was not! Students may need an explanation of what "Drawn to Scale" means before beginning the geometry problems.

If students have an understanding of triangles and angles, they should be fine on most geometry questions.

Geometry Facts Revealed:

o   When you find a geometry problem, see if you can solve it with a logical guess before you actually try to figure it out

o   Be familiar with the size of common angles

o   ***Most shapes will be drawn to scale. Use your eyes to eliminate illogical answers***

o   When a diagram is not given or is not drawn to scale, redraw it

o   ***Fill in any missing info in the figure before solving the problem***

Plane Geometry Formulas

Area of a triangle =1/2(base)(height)

Pythagorean theorem =$a^2 + b^2 = c^2$

30-60-90 Triangles = x-x√3-2x

45-45-90 Triangles = x-x-x√2

Area of a circle= π r^2

Circumference of a circle= 2 πr

Area of square/rectangle=base(height)

Area of a trapezoid = 1/2(b_1+b_2)(height)   **Student Page 60 / Slides 50-52**

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<u>Types of Plane Geometry Problems Include:</u>

Types of Geometry Problems Include:

1. _____

2. _____

3. _____

4. _____

Steps to solve ANY GEOMETRY PROBLEM

Step 1-
_____
_____

Step 2-
_____
_____

Step 3-
_____
_____

Step 4-
_____
_____

Types of Plane Geometry Problems Include:

Types of Geometry Problems Include: (blank for students)

1. *rectangles*
2. *triangles*
3. *circles*
4. *weird shapes*

Steps to solve ANY GEOMETRY PROBLEM (BLANK FOR STUDENTS)

Step 1-
If a figure is given, label it with all information that is in the problem. This includes labeling sides, angels, parallel lines, etc…

Step 2-
If there is no picture, or a picture is not drawn to scale, draw your own and label it with any information given.

Step 3-
Write down any other information that will be important, and note any formulas that you will need to solve the problem

Step 4-
Solve for the missing information, and eventually you will have found your answer. Don't try to jump to it in one step.

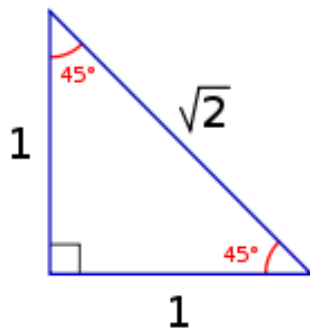**Student Page 61 / Math Slides 53-54**

ACT Math Mini Lesson #22-Triangles

- All Triangles are _____ degrees.
- The area of any triangle is equal to 1/2 (_____)(_____)
- The height must always form a right angle with the base
- An equilateral triangle has 3 equal sides and three equal angles. The angles all equal _____ degrees.
- An isosceles triangle has two equal sides and two opposite equal angles.
- Right triangles contain one ninety degree "right angle"
- The Pythagorean Theorem states that in any right triangle the square of the hypotenuse is equal to the sum of the squares of the other two sides.
- Remember popular Pythagorean "triples" such as 3-4-5 or 5-12-13.
- You need to remember the formulas for "special right triangles."
- The length of a side of any triangle must be less than the sum of the other two sides and greater than their difference
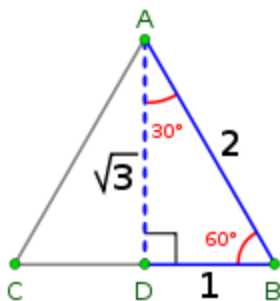
Third Side Rule

Special Right Triangle #1
The "45-45-90"

Special Right Triangle #2
The "30-60-90"

ACT Math Mini Lesson #21-Plane Geometry Introduction

➢ All Triangles are 180 degrees.
➢ The area of any triangle is equal to 1/2 (b)(h)
➢ *The height must always form a right angle with the base*
➢ An equilateral triangle has 3 equal sides and three equal angles. The angles all equal 60 degrees.
➢ An isosceles triangle has two equal sides and two opposite equal angles.
➢ Right triangles contain one ninety degree "right angle"
➢ The Pythagorean Theorem states that in any right triangle the square of the hypotenuse is equal to the sum of the squares of the other two sides.
➢ *Remember popular Pythagorean "triples" such as 3-4-5 or 5-12-13.*
➢ You need to remember the formulas for "special right triangles."
➢ *The length of a side of any triangle must be less than the sum of the other two sides and greater than their difference* ——⟨ **Third Side Rule** ⟩
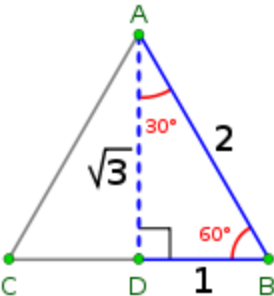
Special Right Triangle #1
The "45-45-90"
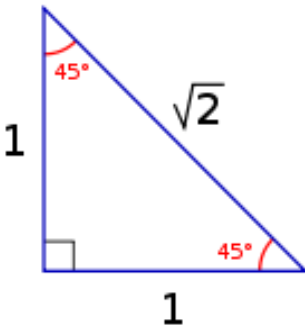
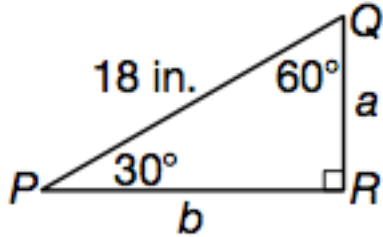

Special Right Triangle #2
The "30-60-90"

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Examples with Special Right Triangles

Example 1:

Find the length of the side PR.

Example 2:

Find the lengths of the other two sides of a right triangle if the length of the hypotenuse is $4\sqrt{2}$ inches and one of the angles is 45°.

Examples with Special Right Triangles

Example 1:

Find the length of the side PR.

Answer: *First find $\overline{QR}$.*

$a = \frac{1}{2}c$

$a = \frac{1}{2}(18)$ *or 9 in.*

$b = a\sqrt{3}$

$b = 9\sqrt{3}$ *or about 15.6 in.*
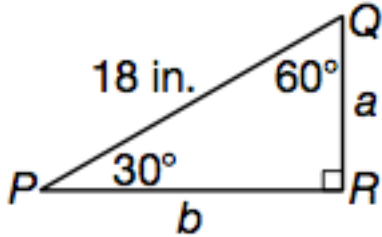
Example 2:

Find the lengths of the other two sides of a right triangle if the length of the hypotenuse is $4\sqrt{2}$ inches and one of the angles is 45°.

Answer: In a 45-45-90 triangle, the legs are each of length x where the hypotenuse is of $x\sqrt{2}$. Therefore, if the hypotenuse is equal to $4\sqrt{2}$, then the sides must each be a length of 4.

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E   F

D   G

13. Figure DEFG is a square. If EG= 4, what is the area of the square?

    A. 4
    B. 4√2
    C. 8
    D. 16
    E. 32
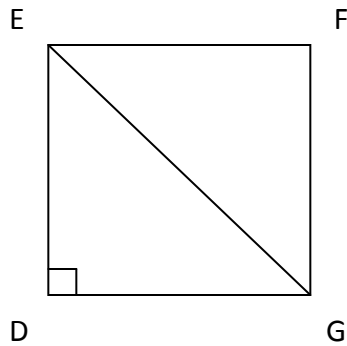
1. *What do you know about the hypotenuse?*

2. *Are the sides of the square bigger or smaller than the length of EG?*

3. *What is a reasonable whole-number guess for the sides of the square*

4. *What is the approximate area of the square?*

5. *What is the only answer that is possible?*

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    A. 4
    B. 4√2
    C. 8
    D. 16
    E. 32
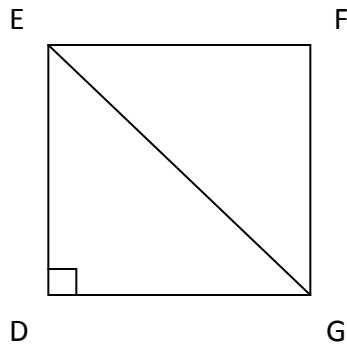
1. *What do you know about the hypotenuse?*
    EG=4

2. *Are the sides of the square bigger or smaller than the length of EG?*
    Smaller (a little bit smaller)

#13 can also be solved using the 45-45-90 rules.

1. $ED=(4/\sqrt{2}DG=(4/\sqrt{2})$

2. $A=bh$
3. $A=(4/\sqrt{2})^2=8$

---

3. *What is a reasonable whole-number guess for the sides of the square*
3-logically makes sense, doesn't have to be exact

4. *What is the approximate area of the square?*
    A=bh, A=9(approximately)

5. *What is the only answer that is possible?*
    Only (C) is close
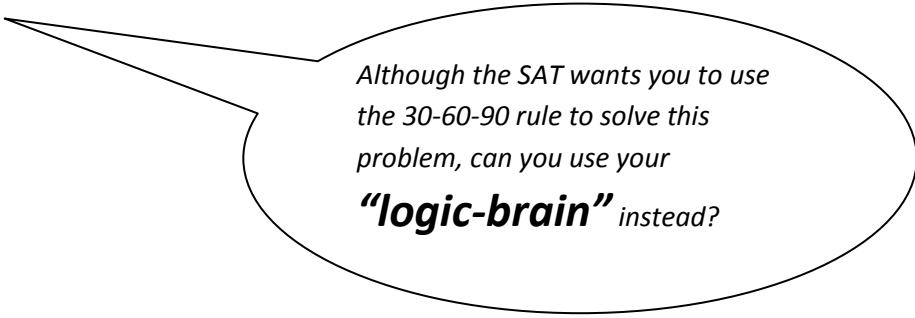
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Triangles Logic Practice

16. An equilateral triangle has a side with a length of 10. What is the area of the triangle?

A. 5√2
B. 25
C. 25√3
D. 50√3
E. 100√2

Although the SAT wants you to use the 30-60-90 rule to solve this problem, can you use your
"logic-brain" *instead?*

1. *Draw your triangle and label the three sides*

2. *Draw your height (makes a right angle with the base)*

3. *What is a reasonable whole-number guess for the length of the height?*

4. *What is the approximate area of the triangle?*

5. *What is the only answer that is possible?*

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Triangles Practice

16. An equilateral triangle has a side with a length of 10. What is the area of the triangle?

A. 5√2
B. 25
C. 25√3
D. 50√3
E. 100√2

Although the SAT wants you to use the 30-60-90 rule to solve this problem, can you use your **"logic-brain"** *instead?*

1. Draw your triangle and label the three sides

2. Draw your height

3. What is a reasonable whole-number guess for the length of the height?

4. What is the approximate area of the triangle?

5. What is the only answer that is possible?

#16

1. Draw a triangle and label each side length of 10

2. Draw height

3. Logically guess that the height appears to be either 8 or 9. It is less than 10, but not a lot less.

4. Approximate the area

A=1/2bh

A=1/2*9*10

A=45 (approximately)

What is the only answer that is possible?

(C)

Alternate Method
1. use the 30-60-90 rule to find height

2. height of the triangle should e 5√3

3. Find Area
A=bh/2
A=10(5√3)/2=25√3

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ACT math Mini Lesson #24-Triangles Practice

1. Points A(1,0), B(8,0), and C(3,4) are the vertices of a triangle.
What is the area of this triangle?

A. 5
B. 10.5
C. 14
D. 16
E. 28

2. A boat travels to a small island. The island is located 9 miles
east and 12 miles north of the boat's departure point. About
how many miles is the island from the departure point?

A. 3
B. 15
C. 21
D. 225
E. $\sqrt{63}$

3. A triangle has sides of length 4 inches and 7.5 inches.
Which of the following CANNOT be the length of the
third side?

A. 3.0 inches
B. 4.0 inches
C. 5.0 inches
D. 5.5 inches
E. 9.5 inches

1. *What is the perimeter of a 30°-60°-90° triangle with*
    a long leg of 12 inches?

A. $6\sqrt{3} + 12$
B. $4\sqrt{3} + 18$
C. $6\sqrt{3} + 18$
D. $12\sqrt{3} + 12$
E. $12\sqrt{3} + 18$

1. Points A(1,0), B(8,0), and C(3,4) are the vertices of a triangle. What is the area of this triangle?

A. 5
B. 10.5
C. 14
D. 16
E. 28

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A. 3
B. 15
C. 21
D. 225
E. $\sqrt{63}$

3. A triangle has sides of length 4 inches and 7.5 inches. Which of the following CANNOT be the length of the third side?

A. 3.0 inches
B. 4.0 inches
C. 5.0 inches
D. 5.5 inches
E. 9.5 inches

4. What is the perimeter of a 30°-60°-90° triangle with a long leg of 12 inches?

A. $6\sqrt{3} + 12$
B. $4\sqrt{3} + 18$
C. $6\sqrt{3} + 18$
D. $12\sqrt{3} + 12$
E. $12\sqrt{3} + 18$

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ACT Math Mini Lesson #25-Circles

Circles: Formulas You Should Know
- ➢ The circumference of a circle is equal to _____ or _____.
- ➢ The area of a circle is equal to _____, where __ is the radius.
- ➢ tangent lines touch a circle at exactly one point and form a ninety degree angle.
- ➢ Circles have 360 degrees.

You should also know these:

1. **Arc Length**= $C_{whole\ Circle}$ (Degrees of arc/360)

2. **Arc Area**= $A_{whole\ Circle}$ (Degrees shaded/360)

The ACT feels students can "logic" their way to figuring out these formulas by simply understanding proportions.

Remember, if the question is talking about arc length, that means that it wants to know about the distance on the outside of the circle, meaning you need to start with the circumference formula.

If the problem asks about arc area, that means it wants to know about the size of the inside of the circle, meaning you need to start with the area formula.

10. Points Y and Z lie on the circle (not pictured) with center O such that YOZ is equilateral. What is the probability that a randomly selected point in the circle lies on minor arc YZ?

A. 1/360
B. 1/60
C. 1/6
D. 6/10
E. 5/6

ACT Math Mini Lesson #25-Circles

- ➤ The circumference of a circle is equal to **πd or 2πr**.
- ➤ The area of a circle is equal to **πr²**, where r is the radius.
- ➤ tangent lines touch a circle at exactly one point and form a ninety degree angle.
- ➤ Circles have 360 degrees.

You should also know these:

3. **Arc Length**= $C_{whole\ Circle}$ (Degrees of arc/360)

4. **Arc Area**= $A_{whole\ Circle}$ (Degrees shaded/360)

The ACT feels students can "logic" their way to figuring out these formulas by simply understanding proportions.

This problem requires students to use formulas that are not given to them on the exam.

This question requires students to understand the concepts of Arc length and arc area.

Students should take note of these formulas, which can be derived using the proportionality of the circle that is being asked about in relation to 360 degrees in the entire circle.

#10
To solve this question, students need to use the arc area formula

The area in this circle is 60 degrees out of the entire 360 degrees of the circle. Therefore, the answer is 60/360=1/6

Remember, if the question is talking about arc length, that means that it wants to know about the distance on the outside of the circle, meaning you need to start with the circumference formula.

If the problem asks about arc area, that means it wants to know about the size of the inside of the circle, meaning you need to start with the area formula.

10. Points Y and Z lie on the circle (not pictured) with center O such that arc YOZ is equilateral. What is the probability that a randomly selected point in the circle lies inside minor arc YZ?

    A. 1/360
    B.1/60
    C. 1/6
    D. 6/10
    E. 5/6

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Circles Practice

7. Two spheres, one with radius 14 and one with radius 8, are tangent to each other. If T is any point on one sphere and W is any point on the other sphere, what is the maximum possible length of TW?

A. 14
B. 22
C. 28
D. 36
E. 44

10. If the length of a minor arc formed by two radii in a circle is 1/40 of the circumference, what is the arc's measurement in degrees?

A. 3
B. 6
C. 9
D. 12
E.15

16. If the point (8,6) lies on a circle with a center at (0,0) what is the area of the circle?

A. 18 π
B. 36 π
C. 48 π
D. 64 π
E. 100 π

<u>**Circles Practice**</u>

7. Two spheres, one with radius 14 and one with radius 8, are tangent to each other. If T is any point on one sphere and W is any point on the other sphere, what is the maximum possible length of TW?

A. 14
B. 22
C. 28
D. 36
E. 44

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A. 3
B. 6
C. 9
D. 12
E.15

16. If the point (8,6) lies on a circle with a center at (0,0) what is the area of the circle?

A. 18 π
B. 36 π
C. 48 π
D. 64 π
E. 100 π

<u>**Student Page 68**</u>

ACT Math Mini Lesson #26 4-Sided Figures

Four-Sided Shapes
- ➢ A square is a rectangle whose sides are equal
- ➢ The perimeter of any quadrilateral is simply the sum of its sides.
- ➢ The area of a rectangle is equal to the base (x) height
- ➢ Remember that any polygon can be divided into triangles
- ➢ The volume of a rectangular solid is equal to the length x width x height
- ➢ Remember how to plot and locate points on a coordinate plane

14. In the figure above, ABCD is a rectangle. If the area of triangle ABE is 40, what is the area of the rectangle?

A. 20
B. 28
C. 40
D. 80
E. 112

This is another problem that you should be able to solve in about 5 seconds-if you use your **"logic-brain"**

14. In square ABCD (not pictured) CD=3, what is the length of diagonal BD?

A. 3√2
B. 3√3
C. 6
D. 6√2
E. 9

4-Sided Figures ACT Math Mini Lesson #26-4-Sided Figures

➢ A square is a rectangle whose sides are equal
➢ The perimeter of any quadrilateral is simply the sum of its sides.
➢ The area of a rectangle is equal to the base (x) height
➢ Remember that any polygon can be divided into triangles
➢ The volume of a rectangular solid is equal to the length x width x height
➢ Remember how to plot and locate points on a coordinate plane

This problem can also be solved using logic.

If the triangle's area is 40, the total area cannot be (A), (B), or (C).

Just by looking at the picture, it's obvious that the total area is closer to three times the area of the triangle, not twice the area of the triangle.

Here's how the ACT wants students to solve this problem

#14
Area of triangle=40
40=8h/2
h=10

AE=10
AD=14
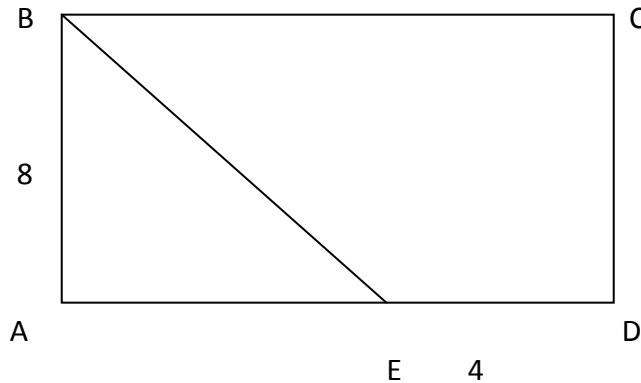
14. In the figure above, ABCD is a rectangle. If the area of triangle ABE is 40, what is the area of the rectangle?

A. 20
B. 28
C. 40
D. 80
E. 112

14. In square ABCD (not pictured) CD=3, what is the length of diagonal BD?

A. 3√2
B. 3√3
C. 6
D. 6√2
E. 9

ACT Math Mini Lesson #27-Plane Geometry Practice:

12. Two lines, q and l, which never intersect, are both tangent to circle T. If the smallest distance between any point on q and any point on l is four less than triple that distance, what is the area of circle T?

A. π
B. π/4
C. 2π
D. 4π
E. 9π

Step 1- Draw the Figure!

Step 2- Write all other information given:

Step 3- What formulas will I need?

      d = ?

      r = ?

      A = ?

ACT Math Mini Lesson #27-Plane Geometry Practice:

12. Two lines, q and l, which never intersect, are both tangent to circle T. If the smallest distance between any point on q and any point on l is four less than triple that distance, what is the area of circle T?

A. π
B. π/4
 C. 2π
 D. 4π
 E. 9π

On geometry problems like this one, which does not have a picture and can be a bit confusing, encourage students to solve by simply breaking it into small pieces.

The steps are detailed to the right.

Students will need to know that the shortest distance between two parallel lines is the line perpendicular to both of them (indicated by the diameter of the circle). This is key information to solve the problem using formulas.

Step 1- Draw the Figure!

Q

T

L
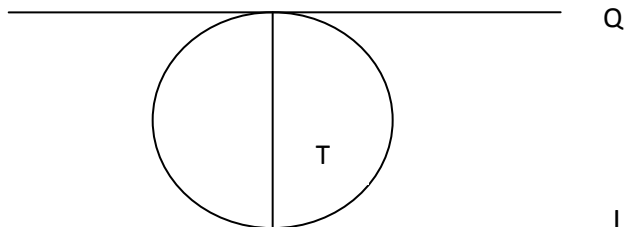
Step 2- Write all other information given:

Step 3- What formulas will I need?

$$d = 3d-4$$
$$d=2$$
$$r = 1$$
$$A = \pi r^2$$
$$A=\pi$$

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ACT Math Mini Lesson #28-Avoiding Algebra Tactics to Solve Geometry Problems

Just because problems include geometry doesn't mean that our two avoiding algebra tactics don't work. Both plugging in our own numbers and plugging in the answer choices work well on geometry problems with triangles, circles, angles, etc.

Take a look at the following problems and see what avoiding algebra tactic can be used...

20. The base of triangle G is 40% less than the length of rectangle W. The height of triangle G is 50% greater than the width of rectangle W. The area of triangle G is what percent of the area of rectangle W?

A. 10
B. 45
C. 90
D. 100
E. 125

What strategy can you use to solve this difficult problem?
(Hint: you can use this strategy for any problem that uses percents)

16. If a circle has an area that is half the circumference, what is its radius?

A. 1/2
B. 1
C. 4
D. π
E. 2π

ACT Math Mini Lesson #28-Avoiding Algebra Tactics to Solve Geometry Problems

This is a very important problem to demonstrate to students because it shows how "plugging un you own numbers can used on geometry problems as well as algebra problems"

Similar to other percent problems, students should pick numbers that make the math easy!

We suggest students pick 10 as the length and width of the rectangle, making the math as easy as possible.

The following pages outline the steps to solving this problem.

Just because problems include geometry doesn't mean that our two avoiding algebra tactics don't work. Both plugging in our own numbers and plugging in the answer choices work well on geometry problems with triangles, circles, angles, etc.

Take a look at the following problems and see what avoiding algebra tactic can be used...

20. The base of triangle G is 40% less than the length of rectangle W. The height of triangle G is 50% greater than the width of rectangle W. The area of triangle G is what percent of the area of rectangle W?

A. 10
B. 45
C. 90
D. 100
E. 125

What strategy can you use to solve this difficult problem?
(Hint: you can use this strategy for any problem that uses percents)

6

15

10

10

Where can I plug in my own numbers?
Width of rectangle w=10 (Let's make it a square, that will make the math easiest)

What does that make the base of the triangle?
40% less than 10 = 6

Next, find the height of triangle G?
Height=15 (50% more than that of rectangle W)

Now that we have our figures labeled, can we find the area of each shape?

Triangle G: | **Rectangle W:**
A=.5(6)15 | **A=10(10)**
A= 45 | **A=100**

Now look back at the question. What are we trying to find? The question asks, the area of triangle G is what percent of the area of rectangle W?

Now that we have areas of each shape, divide triangle G by rectangle W to find the percentage that the question is asking for.

45/100=.45 = 45%. The answer is 45%

**16. If a circle has an area that is half
the circumference, what is its radius?**

A. 1/2
B. 1
C. 4
D. π
E. 2π

ACT Math Mini Lesson #29-Using Logic to Solve Weird Geometry Problems

Has anyone ever tried to setup a geometry problem, written down your formulas, and labeled your figure, and then gotten stuck?

Use the logic side of your brain to eliminate answers that don't meet your "eyeball test."

Hint: About how much of the figure looks shaded?

20. If the figure PQRS above is a square, what is the area of the shaded region?

A. 20 π
B. 40(π -2)
C. 200 (π -2)
D. 100 π
E. 400 π
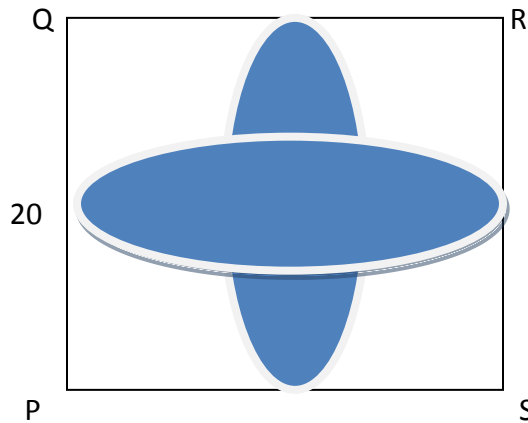
ACT Math Mini Lesson #29-Using Logic to Solve Weird Geometry Problems

There are certain geometry questions where students will be much better off using logic than actually attempting to solve the problem. By using logic and estimating, students can make hard questions easy without spending too much time completing many steps

When solving this question as a class ask students...

1. How much of the figure appears to be shaded?
Answer: About half

2. What is the area of the who square?
Answer: 400

3. What then must the approximate area of the shaded region be?
Answer: About 200

4. What answers can we eliminate?
(E)-impossible
(D)-too big
(B)-too small
(A)-way too small

The answer must be (C)!

Has anyone ever tried to setup a geometry problem, written down your formulas, and labeled your figure, and then gotten stuck?

Use the logic side of your brain to eliminate answers that don't meet your "eyeball test."

20. If the figure PQRS above is a square, what is the area of the shaded region?

A. 20 π
B. 40(π -2)
C. 200 (π -2)
D. 100 π
E. 400 π

There will be 9 coordinate geometry questions on the ACT.

➢ The equation for a line is y=*mx+b.* M is the slope and b is the y-intercept
➢ Parallel lines always have the same slope, perpendicular lines always have negative reciprocal slopes
➢ Every line is a 180 degree angle
➢ Four angles are formed when two lines cross. The sum of these four angles measures 360 degrees.
➢ ***When third line cuts across two parallel lines, the small angles are all equal and the large angles are all equal. The sum of a small angle and a big angle is equal to 180 degrees.***

1. *The equation $y = 10x + 3$ can be graphed in the standard (x, y) coordinate plane. What is the value of the x-coordinate at the point where $y = \frac{1}{2}$?*
    A. -4
    B. $-\frac{5}{2}$
    C. $-\frac{1}{4}$
    D. $\frac{1}{4}$
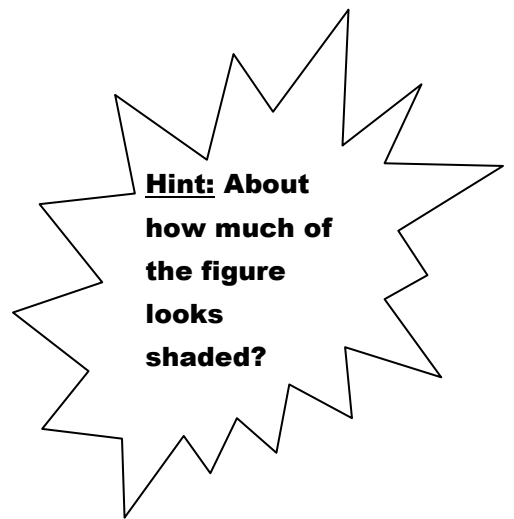   E. 8

Slope Formula = _____

2. *In the standard (x, y) coordinate plane, line m is perpendicular to the line containing the points $(5, 6)$ and $(6, 10)$. What is the slope of line?*

    A. -4
    B. $-\frac{1}{4}$
    C. $\frac{1}{4}$
    D. 4
    E. 8

3. *Line t in the standard (x, y) coordinate plane has a y-intercept of -3 and is parallel to the line having the equation $3x - 5y = 4$. Which of the following is an equation for line t?*

    A. $y = -\frac{3}{5}x + 3$
    B. $y = -\frac{5}{3}x - 3$
    C. $y = \frac{3}{5}x + 3$
    D. $y = \frac{5}{3}x + 3$
    E. $y = \frac{3}{5}x - 3$

ACT Math Mini Lesson #30-Coordinate Geometry

There will be 9 coordinate geometry questions on the ACT.

➢ The equation for a line is y=*mx+b*. M is the slope and b is the y-intercept
➢ Parallel lines always have the same slope, perpendicular lines always have negative reciprocal slopes
➢ Every line is a 180 degree angle
➢ Four angles are formed when two lines cross. The sum of these four angles measures 360 degrees.
➢ ***When third line cuts across two parallel lines, the small angles are all equal and the large angles are all equal. The sum of a small angle and a big angle is equal to 180 degrees.***

1. **The equation $y = 10x + 3$ can be graphed in the standard (x, y) coordinate plane. What is the value of the x-coordinate at the point where $y = \frac{1}{2}$?**

   A. -4
   B. $-\frac{5}{2}$
   C. $-\frac{1}{4}$
   D. $\frac{1}{4}$
   E. 8

Slope Formula = (Change in Y)/(Change in X) or $(y_2\text{-}y_1)/(x_2\text{-}x_1)$

2. **In the standard (x, y) coordinate plane, line m is perpendicular to the line containing the points $(5, 6)$ and $(6, 10)$. What is the slope of line?**

   A. -4
   B. $-\frac{1}{4}$
   C. $\frac{1}{4}$
   D. 4
   E. 8

3. **Line t in the standard (x, y) coordinate plane has a y-intercept of -3 and is parallel to the line having the equation $3x - 5y = 4$. Which of the following is an equation for line t?**

   A. $y = -\frac{3}{5}x + 3$
   B. $y = -\frac{5}{3}x - 3$
   C. $y = \frac{3}{5}x + 3$
   D. $y = \frac{5}{3}x + 3$
   E. $y = \frac{3}{5}x - 3$

   Student Page 73 / Math Slides 69-71

Midpoint Formula= _____

1. *Point B* $(4,3)$ *is the midpoint of line segment AC. If point A has coordinates* $(0,1)$*, then what are the coordinates of point C?*

    A. $(-4,-1)$
    B. $(4,1)$
    C. $(4,4)$
    D. $(8,5)$
    E. $(8,9)$

Distance Formula= _____

1. *What is the distance, in coordinate units, between the points* $(-3,5)$ *and* $(4,-1)$ *in the standard* (x,y) *coordinate plane?*

    A. $\sqrt{13}$
    B. $\sqrt{17}$
    C. $\sqrt{85}$
    D. 13
    E. 85

Midpoint Formula$= (X_1+X_2/2), (Y_1+Y_2/2)$

1. **Point B** $(4, 3)$ *is the midpoint of line segment AC. If point A has coordinates* $(0, 1)$, *then what are the coordinates of point C?*

   A. $(-4, -1)$
   B. $(4, 1)$
   C. $(4, 4)$
   D. $(8, 5)$
   E. $(8, 9)$

Distance Formula$= d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

2. *What is the distance, in coordinate units, between the points* $(-3, 5)$ *and* $(4, -1)$ *in the standard* (x, y) *coordinate plane?*

   A. $\sqrt{13}$
   B. $\sqrt{17}$
   C. $\sqrt{85}$
   D. 13
   E. 85

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Graphing Circles, Ellipses and Parabolas

You won't likely see many questions that ask you to graph these shapes, but it will help to be familiar with the formulas.

When in doubt, use your graphing calculator and plug in points!

The Equation for a Circle = _____

(h, k) = _____

r= _____

The Equation for an Ellipse = _____

(h, k) = _____

2a = _____

2b = _____

The Equation for a Parabola = _____

Example:

When you graph the equation $y^2 = 1 - x^2$ on a standard coordinate plane, the graph would represent which of the following geometric figures?

A. Parabola
B. Circle
C. Ellipse
D. Square
E. Straight line

Graphing Circles, Ellipses and Parabolas

You won't likely see many questions that ask you to graph these shapes, but it will help to be familiar with the formulas.

When in doubt, use your graphing calculator and plug in points!

<u>The Equation for a Circle</u> = $(x-h)^2 + (y-k)^2 = r^2$

(h, k) = center of the circle

r= radius

<u>The Equation for an Ellipse</u> = $(x-h)^2/a^2 + (y-k)^2/b^2 = 1$

(h, k) = center of the ellipse

2a = horizontal axis (width)

2b = vertical axis (height)

<u>The Equation for a Parabola</u> = $y = x^2$

Example:

When you graph the equation $y^2 = 1 - x^2$ on a standard coordinate plane, the graph would represent which of the following geometric figures?

A. Parabola
B. Circle
C. *Ellipse*
D. Square
E. Straight line

<u>**Student Page 75 / Math Slides 74-77**</u>

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ACT Math Mini Lesson #31-ACT Trigonometry

There are only 4 trig questions on the ACT. At least 2 will deal with right triangles.
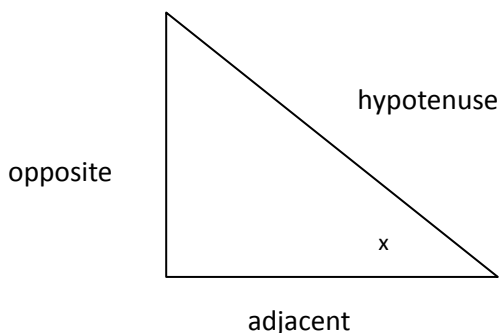
SOHCAHTOA will help you remember most of the formulas

The sine of an angle = _____

The cosine of an angle = _____

The tangent of an angle = _____

Reciprocals

     A. **cosecant**=_____

     B. **secant**=_____

     C. **cotangent**=_____

Trig Identities that will Help on the ACT

     1. _____

     2. _____

There are only 4 trig questions on the ACT. At least 2 will deal with right triangles.

Remind students that because there are only four trigonometry questions, they should not spend too much of their study time in this section.

In fact, students should only study these types of problems after they've mastered the more basic concepts.

ON THE ACT, THERE ARE NO BONUS POINTS FOR ANSWERING DIFFICULT QUESTIONS!
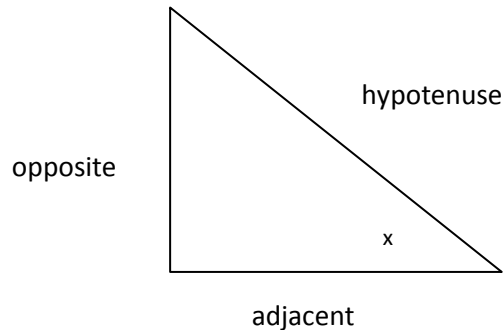
SOHCAHTOA will help you remember most of the formulas

The sine of an angle =

(length opposite of x)/(length of hypotenuse)

The cosine of an angle =

(length adjacent of x)/(length of hypotenuse)

The tangent of an angle =

(length opposite of x) /(length adjacent of x)

Reciprocals

   A. **Cosecant**=1/sine
   B. **secant**=1/cosine
   C. **cotangent**=1/tangent

Trig Identities that will Help on the ACT

   1. $Sin^2\theta + Cos^2\theta = 1$
   2. $Sin\theta/Cos\theta = Tan\theta$

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ACT Trig Practice

1. **For all θ, $\dfrac{\cos\theta}{\sin^2\theta + \cos^2\theta} =$**

   A. $\sin\theta$
   B. $\csc\theta$
   C. $\cot\theta$
   D. $\cos\theta$
   E. $\tan\theta$

2. **If $(\sin\theta + \cos\theta)^2 = \dfrac{5}{2}$, then $\sin\theta\cos\theta = ?$**

   A. 1
   B. $\dfrac{1}{2}$
   C. $\dfrac{1}{4}$
   D. $\dfrac{3}{2}$
   E. $\dfrac{3}{4}$

3. **Which of the following is identically equal to $\sin 2A$?**

   A. $1 - \cos^2 2A$
   B. $2\sin A \cos A$
   C. $2\sin A$
   D. $\dfrac{1}{\sec 2a}$
   E. **None of these**

ACT Trig Practice

4. **For all** θ, $\dfrac{\cos\theta}{\sin^2\theta + \cos^2\theta} =$

    A. $\sin\theta$
    B. $\csc\theta$
    C. $\cot\theta$
    D. $\cos\theta$
    E. $\tan\theta$

5. **If** $(\sin\theta + \cos\theta)^2 = \dfrac{5}{2}$, **then** $\sin\theta\cos\theta =$

    A. 1
    B. $\dfrac{1}{2}$
    C. $\dfrac{1}{4}$
    D. $\dfrac{3}{2}$
    E. $\dfrac{3}{4}$

6. **Which of the following is identically equal to** $\sin 2A$?

    A. $1 - \cos^2 2A$
    B. $2\sin A\ \cos A$
    C. $2\sin A$
    D. $\dfrac{1}{\sec 2a}$
    E. None of these

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Geometry and Trig Summary

Geometry and Trigonometry Notes:

What is the first thing I should do when I look at geometry problems?

_____
_____

How can my "logic brain" help me solve geometry problems?

_____
_____

Do I need to memorize formulas? If so, which ones?

_____
_____

What does "drawn to scale" mean? Are ACT problems always "to scale?"

_____
_____

Are avoiding algebra tactics useless on geometry problems?

_____
_____

What coordinate geometry do I need to know?

_____
_____

How will the ACT test me on trigonometry?

_____
_____

Geometry and Trig Summary

Geometry and Trigonometry Notes:

What is the first thing I should do when I look at geometry problems?

_____
_____

How can my "logic brain" help me solve geometry problems?

_____
_____

Do I need to memorize formulas? If so, which ones?

_____
_____

What does "drawn to scale" mean? Are ACT problems always "to scale?"

_____
_____

Are avoiding algebra tactics useless on geometry problems?

_____
_____

What coordinate geometry do I need to know?

_____
_____

How will the ACT test me on trigonometry?

_____
_____

Student Page 78

Further Practice (Teachers Edition Only)

The following chart outlines the segmentation of the ACT released practice test and displays the problems where students can practice plane geometry, coordinate geometry, and trigonometry questions.

QUESTION TYPE:	ACT Practice Test #1	ACT Practice Test #2	ACT Practice Test #3
Coordinate Geometry	Section 2 #'s 9,10,17,23,37,39,41,48, 52,57	Section 2 #'s 12,26,37,40,43,50	Section 2 #'s 16,17,25,35,36,38,55,56,57
Plane Geometry	Section 2 #'s 5,12,15,25,29,31,34,38, 43,44,54-56,59	Section 2 #'s 9,14,16,18, 29-31,44,45,46,54	Section 2 #'s 6,12,13,20,23,24,26,31,32,34,37,40,45, 46,50,52,58,60
Trigonometry	Section 2 #'s 50,53	Section 2 #'s 25,32,55,56	

ACT English

ACT English Mini Lesson #1-ACT English Intro

You will have 45 minutes to answer 75 questions that will come from 5 passages. Questions will measure your abilities in grammar, organization and style, as well as your ability to strengthen or revise parts of each passage.

The Big 5 ACT English Topics:

1. _____

2. _____

3. _____

4. _____

5. _____

ACT English Section Tips:

1. _____

2. _____

3. _____

Two Little Tricks

1. _____
   _____

2. _____
   _____

ACT English Mini Lesson #1-ACT English Intro

You will have 45 minutes to answer 75 questions that will come from 5 passages. Questions will measure your abilities in grammar, organization and style, as well as your ability to strengthen or revise parts of each passage.

The Big 5 ACT English Topics:

1. Punctuation
2. Grammar
3. Style
4. Sentence structure
5. Organization/Clarity

Students will rely on the "sounds good method" to solve many of the grammar and structure questions. Unfortunately, the ACT knows this, and will often make answers "sound good" when they are not correct.

Encourage students to justify their answers using grammatical rules!

ACT English Section Tips:

1. Avoid the "Sounds Good Method"
2. Use the answer choices as clues to what is being tested
3. More than one error can be tested in the same question

Two Little Tricks!

1. Don't be afraid of "NO CHANGE." This is the correct answer 25% of the time

2. If "OMIT THE UNDERLINED PORTION" is an answer choice, there's a 50% chance that's the answer

Student Page 80 / English Slides 5-10

What if you don't spot the error right away or if you don't know what is being tested?

Unlike Error ID questions where you actually have to recognize what grammatical error is being tested, improving sentences questions tell you exactly what concept they test!

Use the answer choices as clues!

Sometimes, you will not spot the error or errors immediately, or you won't be sure exactly what error they might be testing. If this happens, do not panic, because this happens to everyone.

How do the answer choices tell me what is being tested?

Look down the list of answer choices from (A) to (E) and see where the differences lie. For example, if the verb tense is different in three of the answers, then that's probably what they are testing.

A…has….

Treat these like your roadmap!

B….are…
C…has had…
D…is having…

If you look at the sentence and then look at these answer choices, you can probably guess that they are testing verb tense and subject verb agreement. To find the correct form of the verb, go back to the sentence and look for the subject to see what verb is correct.

What if you don't spot the error right away or if you don't know what is being tested?

Sometimes, you will not spot the error or errors immediately, or you won't be sure exactly what error they might be testing. If this happens, do not panic, this happens to everyone. Use the answer choices to guide you, this is called **VERTICAL READING.**

How do you Read Vertically?

Vertical reading is a strategy where you look down the list of answer choices to see where the differences lie. For example, if the verb tense is different in three of the answers, then that's probably what they are testing.

English questions provide students with a roadmap, and clues them into what they are testing.

A "vertical reading" exercise may be beneficial, especially for lower scoring students.

To do this, we suggest students go through a section of improving sentences questions, and simply look down the answer choices to identify what grammatical concept is being tested (without finding the answer)

A...has....

B....are...

C...has had...

D...is having...

Treat these like your roadmap!

If you look at the sentence and then look at these answer choices, you can probably guess that they are testing verb tense and subject verb agreement. To find the correct form of the verb, go back to the sentence and look for the subject to see what verb is correct.

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Using the answers as clues drill:
Remember, if you don't know what grammar issue the question is testing, simply look down the answers to see where the choices differ. On the following sentences, use the answer choice differences to ascertain what error(s) are being tested on each question and what part of the underlined portion you will need to correct to eliminate answer choices that repeat the errors.

1.
(A) finishing
(B) finished
(C) has finished
(D) having finished

What error(s) are being tested?

2.
(A) meeting as it
(B) meeting as they
(C) meeting, it
(D) meeting will

What error(s) are being tested?

3.
(A) Joe, because he
(B) Joe, therefore he
(C) Joe, and he
(D) Joe; however he

What error(s) are being tested?

4.
(A) night, it was moving
(B) night by moving
(C) night, and it moves
(D) night, for it moves

What error(s) are being tested?

Using the Answers as Clues Drill:
Remember, if you don't know what grammar issue the question is testing, simply look down the answers to see where the choices differ. On the following sentences, use vertical reading to ascertain what error(s) are being tested on each question and what part of the underlined portion you will need to correct to eliminate answer choices that repeat the errors.

1.
(A) finishing
(B) finished
(C) has finished
(D) having finished

What error(s) are being tested?
S/v agreement

2.
(A) meeting as it
(B) meeting as they
(C) meeting, it
(D) meeting will

What error(s) are being tested?
pronouns, clauses

3.
(A) Joe, because he
(B) Joe, therefore he
(C) Joe, and he
(D) Joe; however he

What error(s) are being tested?
Clauses, punctuation

4.
(A) night, it was moving
(B) night by moving
(C) night, and it moves
(D) night, for it moves

What error(s) are being tested
clauses, pronouns, verb tense

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ACT English Mini Lesson #2-Sentence Construction

These questions will test your knowledge of whether or not sentences are put together correctly. They will test you on…

1. Fragments
2. Run-ons
3. Comma Splices
4. Misplaced Modifiers
5. Nonparallel Structure

ACT English Trap

Many students use the "*sounds good method*" to solve ACT grammar sections. The ACT knows this and will try to trick you! They will make things that sound wrong correct and make things that sound fine to you and me incorrect.   Because we often do not speak using proper grammar, these are easy traps to fall for.

Think about tricks

Best Grammar Tip #1: Cut out the Fat!

Many sentences will often contain unnecessary words or phrases that are meant to confuse and distract you and cause you to not see the error. As you read the sentence, cross out any "fatty" or unneeded phrases. These include prepositional phrases, comma phrases, appositive phrases and anything between two commas. These will allow you to not make careless errors see the important parts of the sentence more clearly.

For instance, a **prepositional phrase** is anything that goes in the phrase:

> The bird flew_____the cloud.

 For instance: over, under, across, through, before, of, after, etc…

A **comma phrase**:

> Dr. Phil, an English scholar and author of many books,
> went for a run with his new puppy.

The entire phrase between the commas should be crossed out, and should read:

> Dr. Phil, an English scholar and author of many books,
> went for a run with his new puppy.

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ACT English Mini Lesson #2-Sentence Construction

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ACT English Traps

Many students use the "*sounds good method*" to solve ACT grammar sections. The ACT knows this and will try to trick you! They will make things that sound wrong correct and make things that sound fine to you and me incorrect.   Because we often do not speak using proper grammar, these are easy traps to fall for.

Think about tricks

ACT Grammar questions attempt to separate the subject and verb in the sentence as far as possible so that students misidentify the subject. By cutting the fat, students will hopefully avoid this trap.

Best Grammar Tip #1: Cut out the Fat!

Many sentences will often contain unnecessary words or phrases that are meant to confuse and distract you and cause you to not see the error. As you read the sentence, cross out any "fatty" or unneeded phrases. These include prepositional phrases, comma phrases, appositive phrases and anything between two commas. These will allow you to not make careless errors see the important parts of the sentence more clearly.

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Dr. Phil, an English scholar and author of many books, went for a run with his new puppy.

The entire phrase between the commas should be crossed out, and should read:

Dr. Phil, an English scholar and author of many books, went for a run with his new puppy.

Sentence Structure:

Sentence structure questions test your knowledge of how sentences and ideas should be joined, separated, or put together. These errors will typically be tested through *clauses.*

Clauses

There are two types of clauses that will be tested on the Grammar Section of the ACT:

> Independent Clauses (main) - Can stand on their own as sentences, every sentence
>
> must have at least one.
>
> Dependent Clauses (Subordinate) – cannot stand alone, needs to be joined to an independent
> clause

Independent Clause will be tested in two ways:

> 1. The run-on sentence

The run-on is usually pretty easy to spot because it will be immediately clear that the sentence is long and confusing. The run-on sentence occurs when independent clauses are joined without any punctuation.

> Tim wanted to go to the mall he wanted to see a movie.

> 2. The Comma Splice.

The comma splice error is incredibly common and also often difficult for students to spot because it "sounds" fine.

EX: Tim wanted to go to the mall, he wanted to see a movie.

This is NOT CORRECT. Independent clauses cannot be separated by using a comma.

The corrections:
> Tim wanted to go to the mall, and he wanted to see a movie
> *or*
> Tim wanted to go to the mall; he wanted to see a movie.

Independent clauses must be joined by a **semicolon** or a **comma with a conjunction**.

Sentence Structure:

Sentence structure questions test your knowledge of how sentences and ideas should be joined, separated, or put together. These errors will typically be tested through *clauses.*

Clauses

There are two types of clauses that will be tested on the Grammar Section of the ACT:

In terms of sentence structure questions, students do not typically make errors identifying run-ons and fragments. Because these sentences sound confusing, students usually get these questions correct.

Independent Clauses (main) - Can stand on their own as sentences, every sentence must have at least one.

Dependent Clauses (Subordinate) – cannot stand alone, needs to be joined to an independent clause

Independent Clause will be tested in two ways:

1. The run-on sentence

The run-on is usually pretty easy to spot because it will be immediately clear that the sentence is long and confusing. The run-on sentence occurs when independent clauses are joined without any punctuation.

Tim wanted to go to the mall he wanted to see a movie.

2. The Comma Splice.

The comma splice is a frequently missed error because the sentence with the splice "sounds" fine, and the meaning of the sentence is clear. If time is spent in class instructing this session, comma splice is the most important topic to discuss.

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Commas and Clauses Practice

1. Pollack's most intriguing impressionist works have been

produced at his garden in <u>Madrid, he moved there</u> from

his native France in the 1890s.

A. Madrid, he moved there
B. Madrid; he moved there
C. Madrid, but he moved there
D. Madrid and he moved there

2. There is not much difference between the decision to

enter a presidential race and the decision to walk into

<u>a lion's den, in reality,</u> the lion's den seems more fun.

A. NO CHANGE
B. a lion's den. In reality,
C. a lion's den in reality,
D. a lion's den, in reality

3. The YMCA's expansion plans include a new gym

and a new lunch <u>room if</u> the fundraising drive is

successful there will be enough funds for both.

F. NO CHANGE
G. room, if
H. room; if,
I. room. If

Commas and Clauses Practice

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H. room; if,
I. room. If

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Subordinate (Dependent) Clauses:
Subordinate clauses cannot stand on their own because they do not contain both a subject and verb. Every sentence must have an independent clause, but only some sentences will have dependent clauses.

Subordinate Clauses will be tested in one way:

The Fragment:

Ex: When the customers entered the store, much to their confusion, and following the sale.

Fragment errors are usually easy to spot because they usually sound wrong and confusing. This is a fragment because three subordinate clauses are joined together without an independent clause.

Watch out for fragments on questions which hold a dependent clause by itself, and/or punctuation changes in the answer choices.

Examples

The bride and groom drove away in their car.

As the guests ran behind it, screaming and laughing.

A. No change
B. While the
C. During which the
D. The

Although it will be forever associated with Shakespeare's

Hamlet. The castle at Elsinore was never actually Hamlet's home.

F. No Change
G. Hamlet; the
H. Hamlet. A
J. Hamlet, the

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Subordinate clauses cannot stand on their own because they do not contain both a subject and verb. Every sentence must have an independent clause, but only some sentences will have dependent clauses.

Subordinate Clauses will be tested in one way:

The Fragment:

Fragment questions are not difficult for most students because sentence fragments are confusing, and "sound" weird.

Ex: When the customers entered the store, much to their confusion, and following the sale.

Fragment errors are usually easy to spot because they usually sound wrong and confusing. This is a fragment because three subordinate clauses are joined together without an independent clause.

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ACT English Mini Lesson #3-Verbs

Verbs are action words that describe what the subject of a sentence is doing at a given time. THE ACT will test you on three issues concerning verbs.

1. *Subject-Verb Agreement*
2. *Parallelism*
3. *Tense*

Subject-Verb Agreement:
Singular subjects must take singular verbs and plural subjects must take plural verbs. This sounds pretty easy, but the ACT makes this difficult by attempting to hide the subject and verbs in the sentence.

Singular or Plural:

Sometimes, the ACT will try to confuse you about whether a subject should have a singular or plural verb. These tricky ones are called collective nouns and are always singular.

Collective Nouns
The team *is*
The family *is*
The group *is*
The country *is*
The jury *is*
The audience *is*

Collective Pronouns:
Everyone *is*
Anyone *is*
Each *is*
None *is*
Either *is*
Neither *is*
No one *is*
None *is*

ACT English Mini Lesson #3-Verbs

Verbs are action words that describe what the subject of a sentence is doing at a given time. The ACT will test you on three issues concerning verbs.

As mentioned earlier, verbs are an area where teachers should make sure to focus when discussing grammar.

On these questions, it will significantly benefit students to "cut the fat"

1. ***Subject-Verb Agreement***
2. ***Parallelism***
3. ***Tense***

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Singular or Plural:

Sometimes, THE ACT will try to confuse you about whether a subject should have a singular or plural verb. These tricky ones are called collective nouns and are always singular.

This section is an important one for students, especially lower-scoring students who struggle.

Collective pronoun questions have a high error rate because we often speak incorrectly. For instance, we often use "everyone" and "they" interchangeably in everyday language even though the primary is singular and the latter is plural.

These collective pronouns should be highlighted by students and discussed.

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The family *is*
The group *is*
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Collective Pronouns:
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None *is*
Either *is*
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None *is*

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And vs. Or:

Subjects joined by *and* are plural: Joe *and* Mary <u>are</u> going to dinner. However, nouns that are joined by *or* can be either singular or plural. If the last noun is singular, it takes a singular verb. If the last noun is plural, it takes a plural verb.

And/Or Drill:

Which of the following is correct?

1. The cheerleaders or the football team ***is/are*** getting off the bus.

2. The football team or the cheerleaders ***is/are*** getting off the bus.

Parallelism:

Parallelism simply means that all the verbs in a given sentence must be in the same form. For example, Chris will attend the university, major in biology and to become a doctor. This is an incorrect sentence because all the verbs are not in the same form. "To become" is not the same form

Tense:

Verbs come in many different tenses. Fortunately, you will not have to find and identify the name of the tense that is being used in the sentence. You will simply have to ensure that the correct tense is being used throughout the sentence.

Often, you will be given clues as to what the proper tense for the sentence should be. Take a look at some common clues that will tell you the time frame of the sentence.

Example:

20. By next month Ms. Jones <u>will be Mayor of Tallahassee</u> for two years.

A. will be Mayor of Tallahassee
B. will have been Mayor of Tallahassee
C. will be mayor of Tallahassee
D. could have been mayor of Tallahassee

19. Valarie claims that cats <u>made the best pets.</u>

A. made the best pets.
B. could be the best pets.
C. are the best pets.
D**.** make the best pets

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B. could be the best pets.
C. are the best pets.
D. **make the best pets**   **Student Page 88 / English Slides 23-26**

ACT English Mini Lesson #4-Nouns

When it comes to nouns, the only thing that you really have to worry about is noun agreement. Nouns must agree with other nouns and pronouns must agree with the nouns that they modify. When you see an underlined noun in the error ID section, check to make sure it agrees with the other nouns in the sentence.

7. Many students <u>suffer from a guilty conscience</u>

immediately after cheating on a difficult final exam.

A. suffer from a guilty conscience
B. suffer from a guilty conscience
C. suffer from guilty conscience's
D. suffer from guilty consciences

ACT English Mini Lesson #4-Nouns

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B. suffer from a guilty conscience
C. suffer from guilty conscience's
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ACT English Mini Lesson #5-Pronouns

Pronouns are words like he, she, and them that are used to take the place of nouns. The ACT usually tests three things when it comes to pronouns:

1. *Agreement*
2. *Ambiguity*
3. *Case*

Pronoun Agreement:

As with many other parts of speech, pronouns must agree with the nouns that they stand for. Singular subjects must be replaced by singular pronouns and plural subjects must be replaced by plural pronouns.

A sports book <u>earns most of their money</u> from the

commission taken on each bet, not on the bets themselves.

11. A. earn most of their money
B. earn most of it's money
C. earns most of its money
D. are earning most of their money

When you first taste halva, a bread made from sesame,

<u>one may think one</u> is eating a completely new food group.

12. A. one may think one is
B. people may think they are
C. you may think you are
D. one may be thinking of

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B. people may think they are
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Ambiguity:

When it comes to pronouns, ambiguity refers to cases when you are unsure of who or what a pronoun refers to. On the ACT, if you are ever confused about who or what the pronoun is referring to, it's wrong!

Example: After looking over the paint samples, Jim agreed with Cody that his truck should be painted white.

Whose truck are we talking about? Could it be Jim's truck? Could it be Cody's truck? Because the truck could belong to either of them, the pronoun is ambiguous.

Ambiguity:

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Example: After looking over the paint samples, Jim agreed with Cody that his truck should be painted white.

Whose truck are we talking about? Could it be Jim's truck? Could it be Cody's truck? Because the truck could belong to either of them, the pronoun is ambiguous.

Very few ambiguity errors appear on the ACT, and when they do they are easy to spot because these sentences are quite confusing.

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Case

Pronouns come in two cases, subject pronouns and object pronouns. Subject pronouns refer to subjects that perform the action of the sentence. Object pronouns refer to the person or thing that receives the action. Mostly, you will be able to spot errors in case because the sentence will appear funny. When in doubt, cut the fat and follow the guidelines below.

Simply use this guideline to remember which pronouns go where…

Subject Pronouns   **Object Pronouns**

_____   **laughed at**   _____

Take a Look at the Subject and Object pronouns below

Subject Pronouns: Object Pronouns

Singular   **Singular**

He   Him
She   Her
It   Whom

Plural   **Plural**

We   You
They   Us
You   Them
Who   Whom

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Plural   **Plural**

We   You
They   Us
You   Them
Who   Whom

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I vs. Me

If you are having trouble remembering when to use *I* (subject pronoun) or *me* (object pronoun) it often helps to cut the fat. In many cases this means removing the other person from the sentence.

<u>I vs. Me Drill:</u>

The apartment belongs to Lauren and me

The apartment belongs to Lauren and I

Lauren is the fat, get rid of her…

The apartment belongs to (I or me)

Me is the object and apartment is the subject, therefore the correct answer is *me*.

Try another:

Angie is more athletic than me

Angie is more athletic than I

What are you actually saying in this sentence? You are actually saying that Angie is more athletic than I *am.* However, the *am* is implied. If you in doubt about I or me, add *am* to the end to see which is correct.

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ACT English Mini Lesson #6-Pronoun Usage Drill

Circle the correct Pronoun in each sentence; refer back to the previous page if necessary.

1. Alice gave (he/him) advice on what to wear to his big date.

2. To (who/whom) should Jeremy give the leftovers?

3. Together you and (I/me) will rule the school with an iron fist.

4. (We/Us) football players are planning to burn our jerseys if we don't win a game soon.

5. Between you and (I/me), the ACT is really boring

6. If Andrew built the website (himself/him), the company could save lots of money.

7. (Our/we) son is (who/whom) we would like to inherit the family business.

8. Helen likes chocolate much more than (me/I)

9. Mariah told (us/we) that her next album will be her best yet.

10. (He/Him) easily solved the mystery of (who/whom) failed to flush the toilet.

11. You can have that disgusting liver and onions; (she/her) doesn't want it!

12. Posh is going to find (her/herself) a new hairstyle.

13. Don't worry, it's (me/I).

14. You can count on LeAnn and (I/me) to save the concert.

15. To (whom/who) should I address the letter?

16. Michael can break-dance better than (he/him)

17. It was (he/him) who tagged the bridge and the overpass with graffiti.

18. Kobe bought the necklace for (him/himself)

ACT English Mini Lesson #6-Pronoun Usage Drill

1. Alice gave (he/***him***) advice on what to wear to his big date.

2. To (who/***whom***) should Jeremy give the leftovers?

3. Together you and (***I***/me) will rule the school with an iron fist.

4. (***We***/Us) football players are planning to burn our jerseys if we don't win a game soon.

5. Between you and (I/***me***), the SAT is really boring

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17. It was (***he/***him) who tagged the bridge and the overpass with graffiti.

18. Kobe bought the necklace for (him/***himself***)

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ACT English Mini Lesson #7 Preposition Use

We talked briefly about prepositions earlier in this text. Remember that prepositions are any word that fits in the phrase

The bird flew_____the cloud.

Sometimes the ACT will trick you and use the wrong preposition. Preposition use is often dictated by idioms. Most of them you will spot because they will sound wrong, but a few of them will be more difficult to spot.

Preposition Usage Drill: circle the correct preposition(s)

I am resentful (of/to/for) her

I am happy (about/for) Joe

I am jealous (of/from) my sister

I am worried (for/about) my daughter

The couple had an argument (over/about) the election

You have a responsibility (to/for) take care of your younger brother

My life is not so different (from/of) your life

She is indebted (to/about/for) her husband

I am grateful (of/for/to) you

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Some of these preposition idioms have multiple correct answers. For instance, people can be worried both "for" someone or "about" someone, but "about" is the much more common use.

Also, it is possible to be grateful "for" something and "of" something. In this case, "for" is the much more common preposition.

Preposition Usage Drill: circle the correct preposition(s)

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My life is not so different (**from**/of) your life

She is indebted (**to**/about/for) her husband

I am grateful (of/for/**to**) you

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ACT English Mini Lesson #8-Grammar Drill

Yesterday was one of those mornings when you
learned looking back that it would have been better <u>if</u>
<u>one had</u> simply stayed in bed. The batteries in my
1
alarm clock <u>had died</u> so the alarm didn't go off.
2
When I finally was ready for school, I went to the car
to find that my sister took the <u>car and I</u> couldn't get a
3
ride until later in the day. I then called some friends,
but each of them <u>were</u> too far away to pick me up.
4
My mom, <u>who finally gave</u> me a <u>ride was </u> not too
5   6
happy to hear that I was not at school. Of all the bad
mornings I had this year, this one <u>was the worse.</u>
7

1. A. NO CHANGE
   B. if had
   C. if you has
   D. if one

2. A. NO CHANGE
   B. have died
   C. died
   D. having died

3. A. NO CHANGE
   B. car, and I
   C. car, I
   D. car, but I

4. A. NO CHANGE
   B. was
   C. has
   D. are

5. A. NO CHANGE
   B. whom finally gave
   C. whom gave finally
   D. who gave finally

6. A. NO CHANGE
   B. ride-was
   C. ride, was
   D. ride. Was

7. A. NO CHANGE
   B. were the worse
   C. was the worse
   D. was the worst

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ACT English Mini Lesson #8-Grammar Drill

Yesterday was one of those mornings when you

learned looking back that it would have been better <u>if</u>

<u>one had</u> simply stayed in bed. The batteries in my
₁

alarm clock <u>had died</u> so the alarm didn't go off.
₂

When I finally was ready for school, I went to the car

to find that my sister took the <u>car and I</u> couldn't get a
₃

ride until later in the day. I then called some friends,

but each of them <u>were</u> too far away to pick me up.
₄

My mom, <u>who finally gave</u> me a <u>ride was</u> not too
₅ ₆

happy to hear that I was not at school. Of all the bad

mornings I had this year, this one <u>was the worse.</u>
₇

1. A. NO CHANGE
   B. if had
   C. if you has
   D. if you had

2. A. NO CHANGE
   B. have died
   C. died
   D. having died

3. A. NO CHANGE
   B. car, and I
   C. car, I
   D. car, but I

4. A. NO CHANGE
   B. was
   C. has
   D. are

5. **A. NO CHANGE**
   B. whom finally gave
   C. whom gave finally
   D. who gave finally

6. A. NO CHANGE
   B. ride-was
   C. ride, was
   D. ride. Was

7. A. NO CHANGE
   B. were the worse
   C. was the worse
   D. was the worst

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ACT English Mini Lesson #9-Other Grammar Errors

- Diction Errors
- Faulty Comparisons
- Modifiers
- Adjectives and Adverbs

Diction Errors:

The ACT will occasionally throw a diction error at you just to throw you off. Diction means word choice, and diction errors are often difficult to spot because the incorrect word and the correct word sound exactly the same.

Common Diction Errors

- To/too/two
- They're/there/their
- Your/you're
- principal/principle
- Accept/except
- Affect/effect

Diction Drill:

Irritated-	Aggravated-
Stationary-	Stationery-
Illicit-	Elicit-
Proscribe-	Prescribe-
Imminent-	Eminent-
Allusion-	Illusion-
Perspective-	Prospective-
Conscious-	Conscience-
Elude-	Allude-
Compliment-	Complement-
Veracious	Voracious-

ACT English Mini Lesson #9-Other Grammar Errors (English Slides 35-37)

- Diction Errors
- Faulty Comparisons
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- They're/there/their
- Your/you're
- principal/principle
- Accept/except
- Affect/effect

Diction Drill:

Irritated- *Annoyed*	*Aggravated-* *Made worse*
Stationary- *Not moving*	*Stationery-* *Writing stuff*
Intelligent- *Smart*	*Intelligible-* *Able to be understood*
Illicit- *Illegal*	*Elicit-* *To bring out*
Proscribe- *Forbid*	*Prescribe-* *To set down*
Imminent- *About to occur*	*Eminent-* *At the forefront*
Allusion- *Reference*	*Illusion-* *Trick or deception*
Perspective- *Viewpoint*	*Prospective-* *Potential*
Conscious- *Awake/aware*	*Conscience-* *Morals*
Elude- *Escape*	*Allude-* *To hint at*
Compliment- *Praise or flattery*	*Complement-* *Balance or accompaniment*
Veracious *Truthful/honest*	*Voracious-* *Insatiable/greedy*

Diction Examples:

9. The setting of a story <u>effects the story's plot.</u>

A. effects the story's plot
B. effects the stories plot
C. affect the story's plot
D. affects the story's plot

4. In studying an assignment it is wise to read it over quickly at <u>first, than</u> see the major points, and finally outline the material.

A. first, than
B. first: then
C. first-then
D. first, then

The Faulty Comparison:

When you are comparing things, make sure that they can actually be compared. This seems pretty obvious but in conversation this is a very common mistake.

Ex: *Marc goes to Quiznos because the sandwiches are better than Subway.*

This sounds fine and we know exactly what Marc means. However, this sentence is incorrect. Take a look at what is actually being compared. This sentence compares sandwiches to a store. That is a faulty comparison. Sandwiches must be compared to sandwiches and stores must be compared to stores.

Correctly Written: *Marc goes to Quiznos because the sandwiches are better than the sandwiches at Subway.*

Kelly was overjoyed because her chili <u>was</u>

<u>far better than Joe.</u>

A. NO CHANGE
B. was far better than Joe's chili
C. was far better than the chili of Joe
D. did seem better to Joe

Diction Examples:

9. The setting of a story <u>effects the story's plot.</u>

A. effects the story's plot
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Comparing Groups:

When you are comparing a number of people or things, the comparison word differs depending on how many people or things you are talking about.

Many vs. Much and Less vs. Fewer:

The ACT will occasionally throw errors at you that misuse *many, much, less* and *fewer*. Just remember, if it CAN BE COUNTED you need to use *many* or *fewer*. If the amount CANNOT BE COUNTED, you need to use *much* or *less*.

Ex: With *many* people working, there is *much less* work.

Two People or Things	Three People or Things
Between *Between* you and me, Mom is a bad cook.	**Among** Alice is the *best* athlete among the three of us.
More I like chicken *more* than I like steak	**Most** Of all the dogs I know, Spike is the *most* smelly
Less I am less likely to *lose* than you are	**Least** Of all the people at the table, Sarah is the *least* intelligent.
Better I am a *better* skateboarder than Kimberly	**Best** Tony is the *best* skateboarder that I know.

Example:

If you eat fewer buffalo wings, you will use less ranch dressing.

Example:

8. After comparing my air conditioner with the one on sale, I decided that mine <u>was the most efficient.</u>

A. was the most efficient.
B. was the more efficient.
C. was, by far the most efficient
D. should be considered the most efficient.

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Ex: With *many* people working, there is *much less* work.

Two People or Things	Three People or Things
Between	**Among**
Between you and me, Mom is a bad cook.	Alice is the *best* athlete among the three of us.
More	**Most**
I like chicken *more* than I like steak	Of all the dogs I know, Spike is the *most* smelly
Less	**Least**
I am less likely to *lose* than you are	Of all the people at the table, Sarah is the *least* intelligent.
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ACT English Mini Lesson #10-Adjectives and Adverbs

The ACT will try to trick you by using adjectives when adverbs should be used and vice versa. Adjectives modify nouns, while adverbs modify verbs, adjectives and other adverbs. Adverbs are typically easy to spot because they often end in –ly.

4. We spent Sunday afternoon <u>wandering aimless</u> in the park.

A. wandering aimless
B. wandering aimlessly
C. wandering in an aimless manner
D. wandering almost aimlessly

Misplaced and Dangling Modifiers

Modifiers are descriptive words or phrases that are used to add depth or dimension to the phrase that they modify. Modifiers are misplaced if they do not actually refer to what they are modifying. Modifiers are dangling if you are unsure of what they modify.

Ex: *Because he was tall*, Carmelo was a great basketball player.

Because he was tall is the modifying phrase in the sentence. It gives dimension to the sentence and tells you why Carmelo was a great basketball player. Modifying phrases generally must be placed directly next to the phrase it is modifying.

Every time he urinates on the lawn, Alec praises his new dog by giving him a cookie.

In this sentence, who is urinating on the lawn? Alec is. Of course, we are trying to say that the dog is urinating on the lawn. This modifying phrase needs to be placed near the dog in order for the sentence to say what it means.

Example:

Walking into the jewelry store, <u>Maritza's necklace</u>

<u>dropped into the gutter.</u>

6. A. NO CHANGE
B. Maritza's necklace dropped in the gutter
C. Maritza dropped her necklace in the water
D. Maritza's dropped necklace in the water

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   B. **wandering aimlessly**
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Misplaced and Dangling Modifiers

Similar to faulty comparisons, misplaced modifier questions usually appear toward the end, and are often missed by students because these errors mostly do not "sound" bad.

It is important to stress to students that modifying phrases must appear directly next to the subject that they modify.

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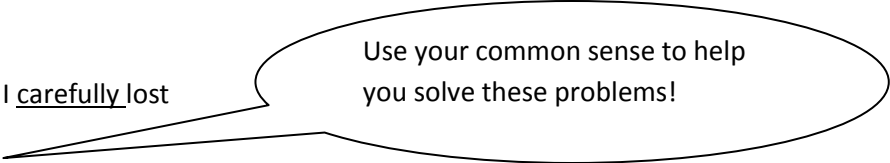
ACT English Mini Lesson #11-Shifts In Construction

These errors are similar to misplaced modifiers, but are slightly different. In these errors, the modifier will be in the wrong place, but no words will need to be changed. In these errors, the modifying phrase simply needs to be moved slightly.

Example:

Attempting to avoid the mud, I <u>carefully</u> lost

my balance and fell.

Use your common sense to help you solve these problems!

7.
A. NO CHANGE
B. (Place before *attempting)*
C. (place after *and*)
D. (place after *fell)*

ACT English Mini Lesson #11-Shifts In Construction
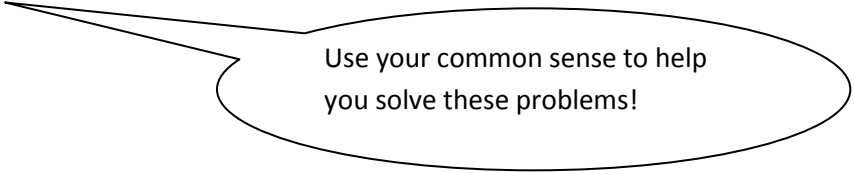
When answering these questions, students need to ensure that they read what the sentence ACTUALLY SAYS, rather than what the author is trying to say.

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Use your common sense to help you solve these problems!

Student Page 101 / English Slides 45

1. Semicolons
2. Dashes
3. Apostrophes
4. Colons

Semicolons
For the purposes of the ACT, semicolons should be used almost the exact same way as a period.

Use a semicolon instead of a period when you are connecting independent clauses with a similar subject.

How do you spot a semicolon error on the ACT?
If any of the answer choices contains a semicolon, ask yourself whether the sentence contains two related independent clauses that are not joined by a conjunction.

Dashes
Dashes (--) separate a word or group of words from the rest of the sentence. Use dashes to indicate an abrupt break in thought, or to introduce an explanation.

Take a look at the example below, and decide which words should be separated from the rest of the sentence.

> I tried to express my gratitude not that any words could be adequate but she just nodded and walked away.

When the group of words that needs isolating is in the middle of the sentence, dashes function in pairs. However, when the phrase that needs isolating is at the end of the sentence, then only one dash is used.

How do you Spot a Dash Error on the ACT?

If the underlined portion of any of the answer choices contains a dash, compare the dash to the other punctuation marks. Check the non-underlined portion of the passage for dashes that need to be paired. Think about whether the sentence contains a sudden break in thought, an explanation, or an afterthought.

Apostrophes
An apostrophe is used to indicate possession or to mark the missing letters in a word. When used to indicate possession, the apostrophe appears either directly before or directly after the *s* at the end of a possessive noun.

Margie's plastic surgery will be extremely expensive.
Women's issues will be important in the next Presidential race
The boys' room will be renovated this weekend.

If the noun is possession is singular, the apostrophe falls before the "s."
Grammar and Usage

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ACT English Mini Lesson #12-Other Punctuation errors

1. Semicolons
2. Dashes
3. Apostrophes
4. Colons

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Its/It's/Its'

The most common apostrophe error on the ACT concerns the misuse of the three words listed above.

It's-_____

> *It's been great talking with you*
> *It's really important to me*

Its-_____

> *The baby crawled around looking for its mother*

Its'-_____

Colons

Use a colon after a complete statement to introduce a list of related details. The list can have many items or only one.

Ex: Joel just bought all the hiking supplies needed for our adventure: a sleeping bag, a backpack, and a pair of new boots.

How do you Spot Colon Errors on the ACT?

If the underlined phrase or any of the answer choices contains a colon, ask yourself the following questions:

1. Is the list introduced by an independent clause?
2. If so, the colon is correct. If not, the colon is probably wrong.

The ACT will try to trick you by using a colon to introduce a list, but do so without the independent clause that must precede it.

Colons can also be used to separate independent clauses when one represents a general thought and the other explains or expands upon the first.

Ex: Alfred didn't know what to do: he could either go to the movies, or go to the library to study for the ACT.

Its/It's/Its'
The most common apostrophe error on the ACT concerns the misuse of the three words listed above.

It's-it is or it has

>   *It's been great talking with you*
>   *It's really important to me*

Its-possessive form of the word it
>   The baby crawled around looking for its mother

Its'-this isn't a word at all! The ACT throws this word on there just to trip you up. "Its'" is never correct!

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Student Page 103 / English Slides 50-51

Punctuation Drill

My most memorable class trip as a kid was the trip I

took to Yosemite with my 7th grade class. I was only 13

<u>at that point; and</u> I'd never been camping before. Our
1

school's <u>principal, a real explorer,</u> decided it would be
2

great for our class to discover the joys of the outdoors.

My image of <u>Yosemite full of flora and fauna</u> was not
3

exactly accurate, yet the true

scenery was more amazing than I imagined.

<u>On our first morning our</u> counselor for the week took
4

us up one of the longest trails. As I followed along

behind my <u>classmates lead</u>, I noticed each of the rocks
5

displayed a unique color <u>formation; violet</u> and charcoal
6

in some places, greenish brown in others. By the time

we reached our destination, I was <u>tired, hot and</u>

<u>thirsty.</u>   The trip to Yosemite was truly life-changing.
7

As I looked back on the view from Half Dome, <u>it's</u>

<u>beauty</u> still amazes me ten years later.
8

1. A. NO CHANGE
B. at that point and
C. at that point, and
D. at that point. And

2. A. NO CHANGE
B. principal, a real, explorer
C. principle, a real explorer,
D. principal, a true explorer

3. A. NO CHANGE
B. Yosemite-full of flora and fauna-
C. Yosemite-full of flora and fauna
D. Yosemite-full of flora and fauna,

4. A. NO CHANGE
B. On our first morning, our
C. On our first morning our,
D. On, our first morning, our

5. A. NO CHANGE
B. classmates' lead
C. classmate's leads
D. classmate's lead

6. A. NO CHANGE
B. formation, Violet
C. formation: violet
D. formation, violet

7. A. NO CHANGE
B. tired, hot, and thirsty.
C. tired hot and thirsty
D. tired, hot, and, thirsty

8. A. NO CHANGE
B. its beauty
C. its' beauty
D. its beauty,

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ACT English Mini Lesson #13- Punctuation Drill

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C. On our first morning our,
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6. A. NO CHANGE
B. formation, Violet
C. formation: violet
D. formation, violet

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C. tired hot and thirsty
D. tired, hot, and, thirsty

8. A. NO CHANGE
B. its beauty
C. its' beauty
D. its beauty,

222

ACT English Mini Lesson #14-Rhetorical Skills

35 of the 75 English questions will test your knowledge of "rhetorical skills." These questions will test strategy, organization, style and transition. You will need to understand the author's argument and think about the most logical flow of ideas.

Strategy Questions

These often test transitions, and they are typically easy questions. Other strategy questions test your ability to improve the passage, rather than fix errors. To help you on these questions, think about the flow of ideas and how to best order the author's thoughts.

Transitions

Same Direction	Cause and Effect	Change Direction

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Transitions

Same Direction	Cause and Effect	Change Direction
And	Therefore	But
Also	Since	Although
Further	Because	Yet
In fact		Rather
;/:		Despite
In addition		In contrast
		However
		Though
		Except

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The Three Types of Organization Questions

Question-Type #1:

_____

_____

Question-Type #2

_____

_____

Question-Type #3

_____

_____

Example

Behind me, I heard kids oohing and aahing at the wonders of the circus. I was eight, and I fell in love with the big top and everything under it right then, even down to the musty sawdust and hay that ground underfoot, so much so that I vowed that someday, I would work under its canvas wings.

12. Which of the following sentences would best continue the personal theme expressed here?

A. As I grew older, I found I had a talent for numbers, and studied accountancy.
B. Twenty years later, I had gone into engineering, and soon went to work for NASA.
C. Throughout high school, I studied acting and drama, and began working with dinner theatre after graduation.
D. It took me several years, but by the time I was 20, I had graduated from clown college and begun working with a small family-run operation.

Organization Questions (Three Types)

Question Type #1: *Questions that ask you to check the placement of the underlined word(s), and possibly move it according to where or what it should modify*

Question Type #2: *Questions that ask you to reorder sentences within a paragraph*

Question Type #3*: Questions that ask you to reorder the paragraphs within the passage as a whole*

Example

Behind me, I heard kids oohing and aahing at the wonders of the circus. I was eight, and I fell in love with the big top and everything under it right then, even down to the musty sawdust and hay that ground underfoot, so much so that I vowed that someday, I would work under its canvas wings.

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Style Questions

Style questions test redundancy, overall tone, and suitability of words. There could also be questions that test wordiness, slang, or irrelevance. Be aware that the ACT prefers formal English to casual.

1. In the brilliant glare of the spotlight, focused on the <u>center one of a group of rings</u> on the dirt floor, a man in a silver suit stood proudly, top hat in hand.

A. NO CHANGE
B. center of the rings
C. center one ring
D. center ring

2. Behind the ringmaster, I could see a majestic lion, pacing <u>back and forth between the sides</u> in the cage and snarling at the clowns that stood off to one side.

A. NO CHANGE
B. REMOVE
C. between the sides
D. back and forth

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2. Behind the ringmaster, I could see a majestic lion, pacing <u>back and forth between the sides</u> in the cage and snarling at the clowns that stood off to one side.

Style questions often ask students to recognize the "repetition error" as does the example #2

A. NO CHANGE
B. REMOVE
C. between the sides
D. back and forth

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ACT English Mini Lesson #15-Rhetorical Skills Practice

(1) I guess that fixing vintage car engines is not a very common hobby for a teenage girl, but that has never really bothered me. (2) I have been helping my dad restore old cars since I was 7 years <u>old, and my</u> dad would let me lie
              1
under the car, hand him tools, and <u>helped</u> change the oil. (3)   2

[2]

By the time I was 11, I was sifting through old car part catalogues to help my dad find spare parts. (4) A lot of it has to do with <u>experience; how</u> you instinctively begin to know
          3
what's wrong with the engine, just by hearing an old car wheezing its way into the shop. (5) It takes quite a while to really get the hang of fixing vintage cars.

[3]

(6) Once one gains an understanding of the basic engine platforms of the Big Three car makers, you can begin to have the ability to diagnose the problem in any car. (7) I will readily admit that I have had some spectacular failures, like attempting to fit some Ford Mustang parts into a Dodge Charger. [4]

[4]

(8) Some skills have been easier to acquire than others. (9) However, my father has been very supportive through the ups and downs of my learning to fix and restore vintage cars. (10) He has <u>bravely taken</u> the progress with the
          5
setbacks. (11) My friends may laugh at my hobby now, but some day when I open up my own car shop, they'll all wish they knew their way around a car's engine like I do.

1. A. NO CHANGE
   B. old, when
   C. old, my
   D. old, since

2. A. NO CHANGE
   B. help
   C. to help
   D. helping

3. A. NO CHANGE
   B. experience, how
   C. experience. How
   D. experience: how

4. Which two sentences, if the order was reversed, would best improve the organization of the paper?

A. 1 and 2
B. 2 and 3
C. 3 and 4
D. 4 and 5

5. A. NO CHANGE
   B. brave taken
   C. taken bravely
   D. bravely took

6. Which sentence could be taken out of the passage most easily without changing the meaning?

A. 8
B. 4
C. 9
D. 5

7. Which of the following sequences of paragraphs gives the passage the most logical progression?

A. NO CHANGE
B. 1,3,2,4
C. 1,4,2,3
D. 3,1,2,4

(1) I guess that fixing vintage car engines is not a very common hobby for a teenage girl, but that has never really bothered me. (2) I have been helping my dad restore old cars since I was 7 years <u>old, and my </u>dad would let me lie
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what's wrong with the engine, just by hearing an old car wheezing its way into the shop. (5) It takes quite a while to really get the hang of fixing vintage cars.

                      [3]
(6) Once one gains an understanding of the basic engine platforms of the Big Three car makers, you can begin to have the ability to diagnose the problem in any car. (7) I will readily admit that I have had some spectacular failures, like attempting to fit some Ford Mustang parts into a Dodge Charger. [4]

                      [4]
 (8) Some skills have been easier to acquire than others. (9) However, my father has been very supportive through the ups and downs of my learning to fix and restore vintage cars. (10) He has <u>bravely taken</u> the progress with the
                   5
setbacks. (11) My friends may laugh at my hobby now, but some day when I open up my own car shop, they'll all wish they knew their way around a car's engine like I do.

1. A. NO CHANGE
   B. old, when
   C. old, my
   D. old, since

2. A. NO CHANGE
   B. help
   C. to help
   D. helping

3. A. NO CHANGE
   B. experience, how
   C. experience. How
   D. experience: how

4. Which two sentences, if the order was reversed, would best improve the organization of the paper?

A. 1 and 2
B. 2 and 3
C. 3 and 4
D. 4 and 5

5. **A. NO CHANGE**
   B. brave taken
   C. taken bravely
   D. bravely took

6. Which sentence could be taken out of the passage most easily without changing the meaning?

A. 8
B. 4
C. 9
D. 5

7. Which of the following sequences of paragraphs gives the passage the most logical progression?

A. NO CHANGE
B. 1,3,2,4
C. 1,4,2,3

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The following chart outlines the segmentations of the English sections of the released ACT exams. Students can track their progress in the following categories within ACT English.

Question Type	ACT Practice Test #1
Punctuation	Section 1 #'s 9,15,18,23,35,40,49,51,57,59,61,62,64,65,66,67
Style	Section 1 #'s 11,16,17,21,41,43,46,50,52,54,71,75
Grammar	Section 1 #'s 1,3,4,8,14,20,24,25,29,30,31,33,37,38,42,47,56,63,68,72,73,74
Organization/Clarity	Section 1 #'s 2,5,7,10,12,13,19,22,28,34,36,44,45,48,55,60,69,70
Sentence Structure	Section 1 #'s 6,26,27,32,39,53,58,59
Question Type	ACT Practice Test #2
Punctuation	Section 1 #'s 2,4,5,7,14,17,23,34,36,43,48,54,62,68,75
Style	Section 1 #'s 1,6,13,16,19,22,25,30,31,51,55,72
Grammar	Section 1 #'s 8,9,12,24,27,35,38,39,41,44,46,50,52,57,58,61,64,66,67,73,74
Organization/Clarity	Section 1 #'s 3,10,11,15,18,20,26,32,33,42,45,47, 53,56,59,60,63,65,71
Sentence Structure	Section 1 #'s 21,28,29,37,40,49,69,70
Question Type	ACT Practice Test #3
Punctuation	Section 1 #'s 5,17,20,21,22,25,30,31,34,37,39,41,44,47,56,58
Style	Section 1 #'s 6,19,28,32,40,43,50,53,63,71
Grammar	Section 1 #'s 3,4,8,9,10,11,16,18,23,24,26,29,33,46,48,51,57,59,65,66,67,68,70,74
Organization/Clarity	Section 1 #'s 1,12,13,14,15,35,36,38,42,45,49,52,60,61,64,69,75
Sentence Structure	Section 1 #'s 2,7,27,54,55,62,72,73

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ACT Reading

Reading Comprehension Notes for Teachers (TEACHER EDITION ONLY)

Reading for the ACT vs. Reading for English Class

Students often struggle for time on the ACT reading sections because they attempt to read for the ACT like they would for their English class. Since students have been in school, when teachers have given them books, poems, stories or articles, they were expected to read, remember, and understand what was given to them.

Unfortunately, this habit greatly hurts students on the ACT. For the purpose of the exam, students get NO POINTS FOR UNDERSTANDING the passages, but rather receive points for answering the QUESTIONS. Further, because the passage is always in front of students, they should not waste time and brain energy trying to remember the passage.

How can students save time on ACT reading?

First off, the biggest mistake that students make is that they spend too much time with the passage, and not enough time understanding what these tricky questions really ask.   ACT reading questions don't go too deep into every little detail of the passages. Instead, they ask repeated questions about the same couple of key lines of the passage.

How should students approach reading passages?

Although the steps are detailed in the workbooks, it is absolutely key for students to identify and understand the few key argumentative sentences within the passage. This means that students should ensure that they identify the author's thesis statement before answering the questions. Further, this also means

ACT Reading Mini Lesson #1-ACT Reading vs. English Class

ACT Reading Comprehension…the part everybody hates!

Reading passages are almost always the most boring and dreaded part of the ACT. However, with a few simple strategies, you can save lots of time and avoid key errors.

The first key to understanding ACT reading passages is to know how reading on the ACT differs from reading for your English class at school.

How long do you need to remember things you read?

       English Class _____

       ACT _____

What's being graded and how?

       English Class_____

       ACT _____

What happens on a Multiple Choice Test if a student objects to a correct answer?

       English Class _____

       ACT _____

ACT Reading Mini Lesson #1-ACT Reading vs. English Class

Reading passages are almost always the most boring and dreaded part of the ACT. However, with a few simple strategies, you can save lots of time and avoid key errors.

The first key to understanding ACT reading passages is to know how reading on the ACT differs from reading for your English class at school.

How long do you need to remember things you read?

> **English Class: Months!**
> **ACT : Never!**

What's being graded and how?

English Class: essays, projects, etc-(students must come up with creative ideas to get A's)

ACT: Multiple choice questions only!

Reading for the ACT vs. Reading for English Class

Students often struggle for time on the ACT reading sections because they attempt to read for the ACT like they would for their English class. Since students have been in school, when teachers have given them books, poems, stories or articles, they were expected to read, remember, and understand what was given to them.

Unfortunately, this habit greatly hurts students on the ACT. For the purpose of the exam, students get NO POINTS FOR UNDERSTANDING the passages, but rather receive points for answering the QUESTIONS. Further, because the passage is always in front of students, they should not waste time and brain energy trying to remember the passage.

Ask the class the following questions…

"How many of you have ever taken a multiple choice test on a book in your English Class?" (Almost every student will raise hand)

"Okay great. Now when your teacher passed the test back and reviewed the answers, how many times did the following scenario happen…?

"One student says 'Ms. Smith, on #12, you said the answer was (B), but I put (D) because…' and then many other students chime in to the point that the teacher says, 'Okay, anyone who put (D) for #12, I'll give you the points back.' (Students will nod saying this happens in their classes)

Can the ACT afford to write questions where this scenario could happen?
NO! What does that mean for you?

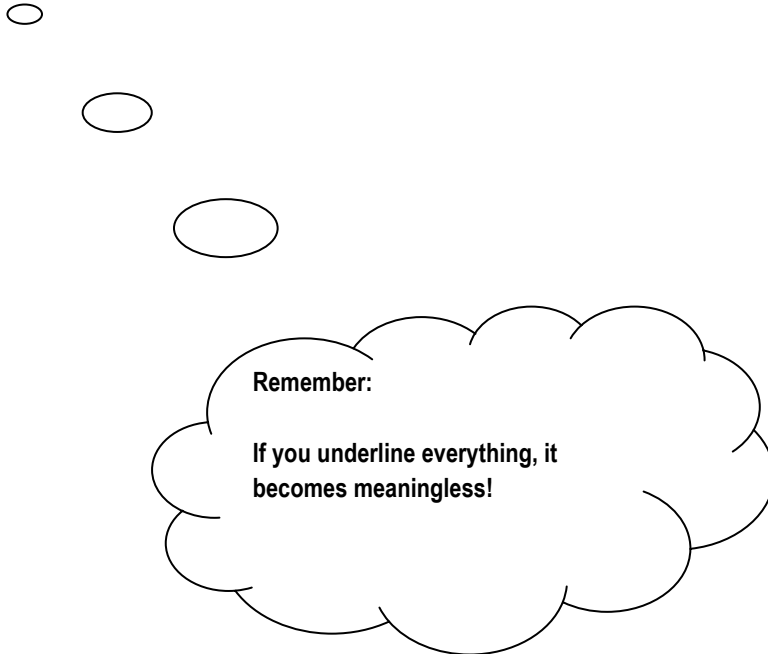*ALL CORRECT ANSWERS ON ACT READING COMP MUST HAVE DIRECT SUPPORT FROM THE PASSAGE!*

Student Pg. 111   *Reading Slides 4-5*

How to read ACT passages:

Essentially, there are two ways to read. One of them is how the ACT wants you to read, the other is how you SHOULD be reading ACT passages. Take a look at the following chart:
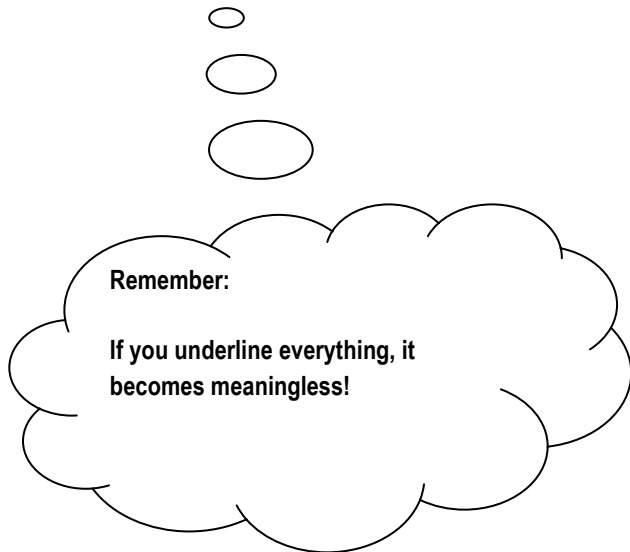
ACTIVE READING	PASSIVE READING
You *turn your brain on* before reading	Brain is off during reading
Great for: School reading, research, the SAT/ACT/PSAT/AP Tests	Great for: Magazines, Harry Potter books, brochures, etc
You *think critically* about the author/characters while reading	You simply read/skim to understand the main point
You *underline key aspects* and make notes as you read	You simply lie on the couch and flip the pages

Remember:

If you underline everything, it becomes meaningless!

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Essentially, there are two ways to read. One of them is how the ACT wants you to read, the other is how you SHOULD be reading ACT passages. Take a look at the following chart:

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You *underline key aspects* and make notes as you read	You simply lie on the couch and flip the pages

Remember:

If you underline everything, it becomes meaningless!

As mentioned earlier, many students struggle on ACT passages because they lose concentration or focus on the least important aspects.

We stress to students that if they let the ACT guide their thinking, they will face a huge uphill battle. By "active" reading and thinking, students will hopefully use their own brains, thereby saving time and improving accuracy.

Students must aggressively attach the passages and questions!

Student Page 112 / Reading Slides 6-7

ACT Reading Mini Lesson #2-ACT Reading Tips

Reading Test Format

You will read 4 passages and answer 40 questions in 35 minutes. This means, you have approximately 9 minutes per passage.

The Reading Test Passages

The four reading test passages will come from the following fields. As you practice, take a look at each type of passage, and decide which you find easiest. Then do the passages from easiest to hardest. Many people run out of time during the reading test. If you answer the passages from easiest to hardest and you run out of time, then you will have left the hardest ones to guess and actually answer the easy ones.

1. _____

2. _____

3. _____

4. _____

ACT Reading Passages Basic Strategy:

1. _____

2. _____

3. _____

4. _____

5. _____

Just like in the other sections, ACT reading is designed such that students struggle with the time. That's why it's important for students to order the 4 passages from easy to hard, and to answer the questions within the passages from easiest to hard (AKA fastest to slowest)

Our experience says that the fastest two passages to get through are the natural science and social sciences passages. The prose fiction passages usually take students the longest amount of time.

ACT Reading Mini Lesson #2-ACT Reading Tips

Reading Test Format

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1. Prose Fiction
2. Social Sciences
3. Humanities
4. Natural Science

ACT Reading Passages Basic Strategy:

1. Take the passages in the best order for you

2. Learn how to find trap answers

3. Use POE to eliminate trap answers

4. Spend time understanding the questions, rather than understanding the passage

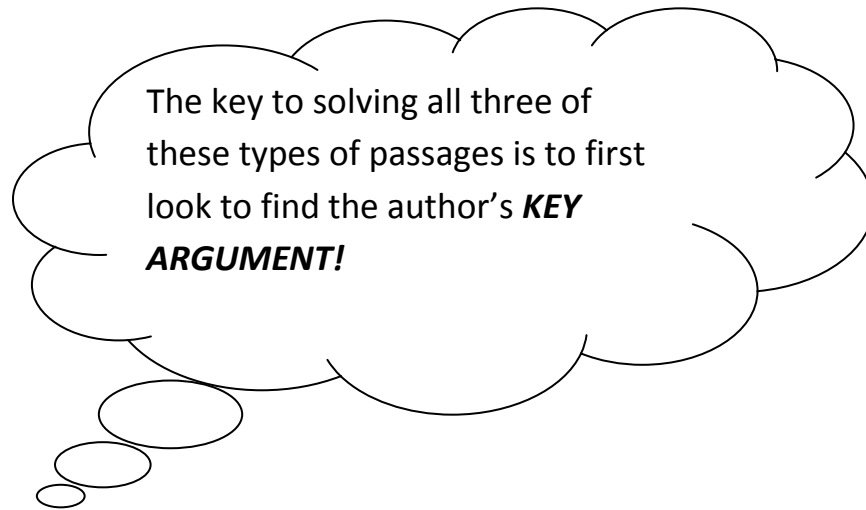5. **COVER THE ANSWERS AND PREDICT WHENEVER POSSIBLE**

The #1 mistake students make in ACT reading is that they spend too much time attempting to read/understand the passage, and not enough time understanding what the questions really ask!

The "cover and predict" method is essential to saving time and avoiding trap answers.

Student Page 113 / Reading Slides 8-10

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Natural Science, Social Science, and Humanities Passages

Natural Science Passages
These passages are often filled with many details and complex descriptions. Be sure to go back to the passage to find the answers to each question.

Social Science and Humanities Passages
These passages are a sort of hybrid between natural science passages and prose fiction passages. Typically, the author will be making an argument of some kind about the subject of the passage, from which you will make logical conclusions.

The key to solving all three of these types of passages is to first look to find the author's *KEY ARGUMENT!*

Natural Science, Social Sciences, and Humanities Passages

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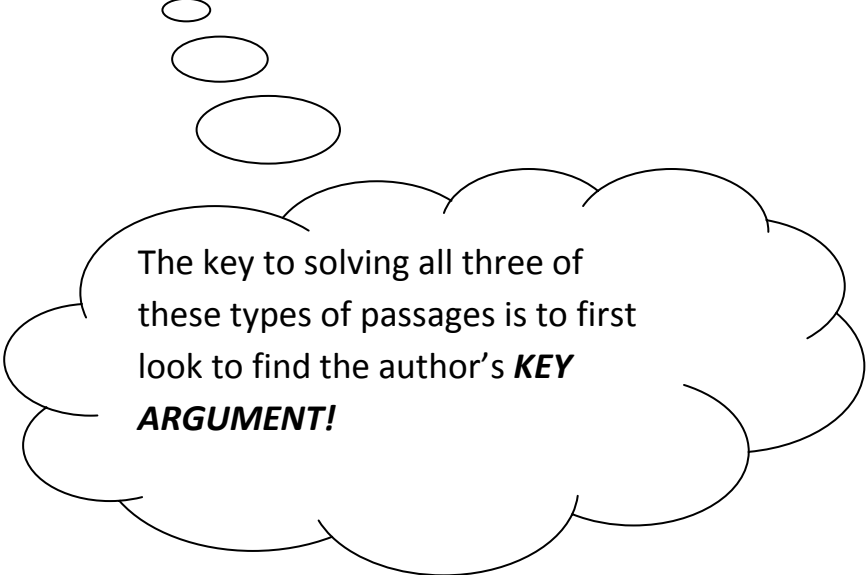
Social Science and Humanities Passages
These passages are a sort of hybrid between natural science passages and prose fiction passages. Typically, the author will be making an argument of some kind about the subject of the passage, from which you will make logical conclusions.

These three passages often ask students the SAME questions again and again. All of these questions revolve around the key argument of the passage.

Some students will struggle to identify the argument in the passage, and will instead look for facts.

Remind students that an argument is an opinion, and that these argumentative statements are often found in the first or last paragraph of the passage.

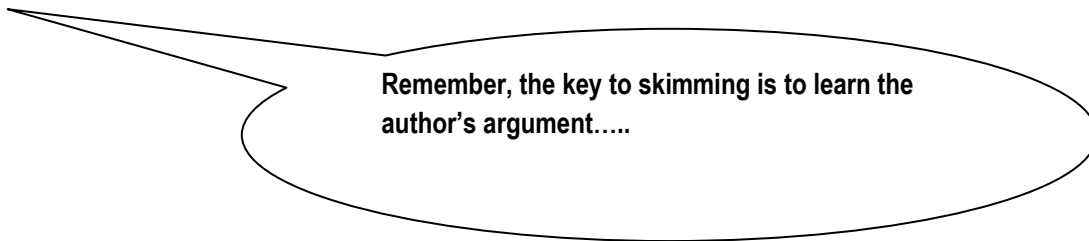The key to solving all three of these types of passages is to first look to find the author's *KEY ARGUMENT!*

Student Page 114 / Reading Slides 11

ACT Reading Mini Lesson #3- Understand Key Arguments

Step 1. _____
Each long passage will be preceded by an italicized blurb about the passage. Read it! This will give you a general idea about what you are about to read.

Step 2. _____
This doesn't mean read the whole thing! Read the first paragraph and skim the passage from there. Remember, you get no points for understanding the passage as a whole.

> **Remember, the key to skimming is to learn the author's argument…..**

"The Blurb"
The following passage was adapted from an article published in the New York Herald around 1870. The article discusses the sport of baseball, which was just becoming popular at the time.

Some few years ago there was no manly outdoor sport in which
the youth of the country could indulge and which could be claimed
as national. The game baseball in a crude form was practiced
Line   among others, and by a few gentlemen was being systematized and
(5)   perfected. The Herald, observing that in the game were all the
elements which could commend it as a favorite pastime, styled it
the National Game, and from that time to the present the young
men—and many of the old men—of the country have adopted it as a
means of recreation, amusement, and physical development.
(10)   That the game possesses the requisites for affording
recreation and relaxation from daily labor is plainly shown by
the thousands who flock to witness contests between any of the
leading organizations. That it promotes the physical development
is attested beyond a doubt by the improved physiques of those who
(15)   practice with the bat and ball. Every portion of the physical
system is brought into action, while the mind is subjected, at
the same time, to a recreative course of treatment. The eye is

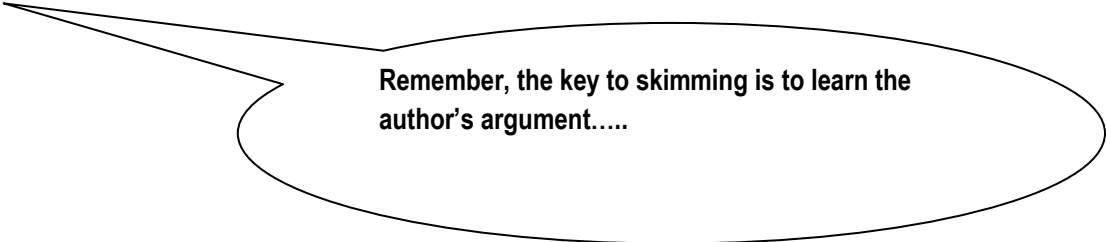# ACT Reading Mini Lesson #3- Understand Key Arguments

Part I: Understand Key Arguments (Reading Slides 12-13)

Step 1. *Read the italicized "blurb" at the top*
Each long passage will be preceded by an italicized blurb about the passage. Read it! This will give you a general idea about what you are about to read.

Step 2. *Skim the passage to find the THESIS...one minute maximum*
This doesn't mean read the whole thing! Read the first paragraph and skim the passage from there. Remember, you get no points for understanding the passage as a whole.

> Remember, the key to skimming is to learn the author's argument.....

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The following passage was adapted from an article published in the New York Herald around 1870. The article discusses the sport of baseball, which was just becoming popular at the time.

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(15)	practice with the bat and ball. Every portion of the physical system is brought into action, while the mind is subjected, at the same time, to a recreative course of treatment. The eye is trained to take in at once the entire situation; the hearing is quickened, to enable the players to note the slightest click of
(20)	"tip" and to understand the call of the umpire or the order of the captains when the other faculties are intent on some other point; the judgment is exercised so as to enable the player to

(25)   decide instantly on the best course of action to benefit his
        party, and the muscular strength is developed by the running,
        throwing, pitching, and batting in which all take part during the
        contest.
             The game has now been reduced to a science, and the
        objection which was formerly made to it, on the ground that,
        compared to cricket, it was child's play, can no longer be
(30)   raised. It was considered by some as being too dangerous; fingers
        were broken and the players were otherwise wounded, while in
        cricket the men could pad themselves so that they would not be
        hurt. Is it an objection to swimming that people are drowned
        sometimes? Or to skating that people are hurt by collisions or
(35)   falls? Besides, the fact that the players at baseball
        unflinchingly face the dangers shows the inherent bravery of the
        American people and their determination to obtain even amusement
        at the risk of danger.
             Aside from these considerations, the formation of clubs and
(40)   state and national associations presents an advantage to the
        youth of this country. In these associations the members are
             almost unconsciously trained in the system of legislation.
        Business is conducted on the same plan as the legislative and
        corporate bodies throughout the country, and the members of the
(45)   club become fitted for the proper performance of their duties as
        sovereigns. There is still another advantage to be derived from
        the associations which may be formed in the leading amateur
        organizations, such as the Empire, Knickerbocker and Eagle clubs
        of New York, Excelsior and Star of Brooklyn, Eureka of Newark,
(50)   and National of Albany; for in them gentlemen of the highest
        standing in business and social circles may be found, aiding by
        their presence and their influence the progress and permanency of
        the national game.

What is the author's key argument in this passage?

_____
_____
_____

What lines did you find the thesis and other key argumentative statements?

_____
_____
_____

(20) trained to take in at once the entire situation; the hearing is quickened, to enable the players to note the slightest click of "tip" and to understand the call of the umpire or the order of the captains when the other faculties are intent on some other point; the judgment is exercised so as to enable the player to decide instantly on the best course of action to benefit his party, and the muscular strength is developed by the running,

(25) throwing, pitching, and batting in which all take part during the contest.

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(50) and National of Albany; for in them gentlemen of the highest standing in business and social circles may be found, aiding by their presence and their influence the progress and permanency of the national game.

What is the author's key argument in this passage?
Answer: *see lines 7-9 and 35-38*

What lines did you find the thesis and other key argumentative statements?
Answer: *lines 7-9*

Student Page 116

ACT Reading Mini Lesson #4- Types of Questions and How to Answer Them

Step 3. _____

After you have skimmed the passage, head for the questions and start breaking them down. We will discuss specifically the order in which you should answer the questions.

Step 4. _____

You don't get extra points for trying to answer the question from memory. All the answers to the questions are right in front of you. Go back to the passage and find the required information.

Ordering the Questions

Comprehension Questions   **Reasoning Questions**

Ask about the passage   Ask about the author's argument

ACT Reading Mini Lesson #4- Types of Questions and How to Answer Them

Students should feel free to order the questions in what they find to be "easiest to hardest." This order does not have to be the same for each student.
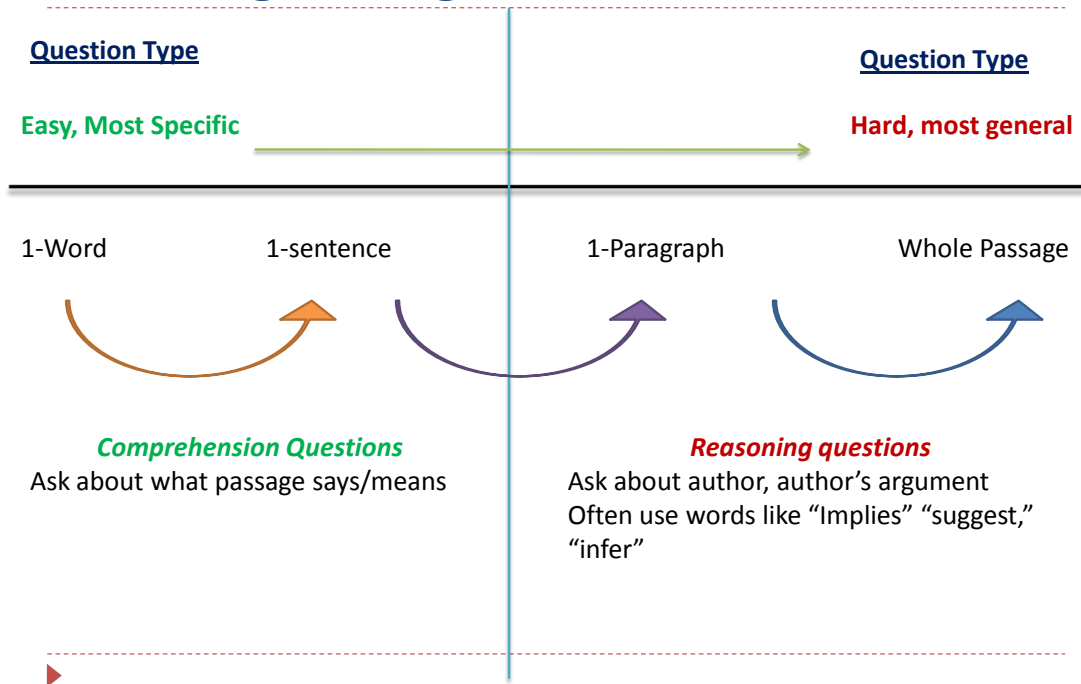
Step 3. *Answer the questions from specific to general*
After you have skimmed the passage, head for the questions and start breaking them down. We will discuss specifically the order in which you should answer the questions.

Step 4. *Refer back to the passage*
You don't get extra points for trying to answer the question from memory. All the answers to the questions are right in front of you. Go back to the passage and find the required information.

Ordering Passage Questions

Question Type   **Question Type**

Easy, Most Specific   **Hard, most general**

1-Word   1-sentence   1-Paragraph   Whole Passage

Comprehension Questions   *Reasoning questions*
Ask about what passage says/means   Ask about author, author's argument
                                         Often use words like "Implies" "suggest," "infer"

Student Page 117 / Reading Slides 14-15

Ordering the Questions to Maximize Time

The reading passage questions will not come in a specific order of difficulty. It will be up to you to decide which questions are easy, medium or difficult. Remember, all the
questions are worth the same amount of points, so spend your time to avoid making careless mistakes on easy or medium questions.

Essentially, there will be two types of questions to test your knowledge of long passages. The first type of question will ask you to literally comprehend the meaning of the passage. The second type of questions can be described as reasoning questions and will ask you to understand SLIGHTLY beyond the literal meaning of the passage.

Easy Questions	Hard Questions

Ordering the Questions Drill

Imagine you encounter the following questions. Don't worry about answering them, since you don't have either the passage or the answer choices. Instead, refer to the chart above, and make a note next to the question from 1-8, in the order that these questions should be answered.

___ *According to the passage in line 9, "spell" most nearly means*

___ *In lines 10–22, the author notes that a "hard day's work" does all of the following EXCEPT*

___ *In lines 31–33, the author mentions the loss of Alice's innocence in order to*

___ *The author's tone in lines 31–34 could most accurately be characterized as*

___ *In line 7, "harassing" most closely means*

___ *The author suggest that athletes*

___ *The "Good Walk Spoiled" (line 32) most likely refers to a*

___ *In paragraph 4, the author argues that dancing helps the elderly of America by*

Ordering the Questions to Maximize Time (Reading Slides 16-17)

The reading passage questions will not come in a specific order of difficulty. It will be up to you to decide which questions are easy, medium or difficult. Remember, all the questions are worth the same amount of points, so spend your time to avoid making careless mistakes on easy or medium questions.

Essentially, there will be two types of questions to test your knowledge of long passages. The first type of question will ask you to literally comprehend the meaning of the passage. The second type of questions can be described as reasoning questions and will ask you to understand SLIGHTLY beyond the literal meaning of the passage.

Easy Questions	*Hard Questions*
Ask about the passage	Ask about the author
Usually specific	Usually not specific
Can be done quickly (do these 1st)	Take a bit more time (do these 2nd)
Questions include "Vocab in context, line reference, and lead phrase"	Questions include "author's argument, tone, main point, etc…"
Worth one point	Worth one point

Ordering the Questions Drill

Imagine you encounter the following questions. Don't worry about answering them, since you don't have either the passage or the answer choices. Instead, refer to the chart above, and make a note next to the question from 1-8, in the order that these questions should be answered.

_2_ According to the passage in line 9, "spell" most nearly means

_7__ In lines 10–22, the author notes that a "hard day's work" does all of the following EXCEPT

If students have a slightly different order for the questions that this one, that's okay. This is not an exact science, and the goal of this drill is for students to understand that they will benefit from answering "fast questions" at the beginning, and "slow questions" at the end.

_4__ In lines 31–33, the author mentions the loss of Alice's innocence in order to

_8_ The author's tone in lines 31–34 could most accurately be characterized as

_1__ In line 7, "harassing" most closely means

_5__ The author suggest that athletes

_3_ The "Good Walk Spoiled" (line 32) most likely refers to a

_6__ In paragraph 4, the author argues that dancing helps the elderly of America by

Further Info of Long Passage Strategy Step 3-Types of Questions

ACT Mini Lesson #5-Further Info on Types of Reading Questions

Comprehension Questions

Facts about Comprehension Questions
- Look to complete literal comprehension questions first!
- These questions will most likely be the easier of the two question types
- These questions often contain line numbers that will tell you exactly where in the passage that you need to look to find the answer.
- These questions include: line reference questions, lead word questions and vocabulary in context questions

Line Reference Questions
The best way to spot literal comprehension questions is to look for a specific line reference within the question.

Examples:

> The author uses the quote from Smith's book
> (line 67) to demonstrate that

> In lines 23-24 the main character's primary
> concern is

> According to paragraph 2 (lines 19-24)
> archeologists studied the fossils in order to

Many times you will be able to solve these questions just by going to those specific lines. However, don't be fooled, **the answers to the questions often lay just a few lines away from the given lines**. These questions are often solved best by going back to the passage, finding the answer and stating it in your own words.

ACT Mini Lesson #5-Further Info on Types of Reading Questions

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This section provides detailed information about the types of questions that will appear in the reading section. This section can be skipped if instructor is running short on time. (Move on to mini lesson #6)

</td>
<td>

Comprehension Questions

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- These questions often contain line numbers that will tell you exactly where in the passage that you need to look to find the answer.
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</td>
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</table>

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In lines 23-24 the main character's primary concern is

According to paragraph 2 (lines 19-24) archeologists studied the fossils in order to

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On line-reference questions, students need to remember that if the question refers to lines 16-17, the answer to question probably lies in either 14-15, or 18-20.

</td>
<td>

Many times you will be able to solve these questions just by going to those specific lines. However, don't be fooled, the answers to the questions often appear just a few lines away from the stated lines. These questions are often solved best by going back to the passage, finding the answer and stating it in your own words.

</td>
</tr>
</table>

Student Page 119 / Reading Slides 18-20

Vocabulary in Context Questions

Some line reference questions will be deemed vocabulary questions. For instance a question could ask you about the meaning of the word "spell" in line 45. Be careful because the words that they ask you about will always have multiple meanings. Therefore, it's important to treat these questions in the same way that you would treat sentence completions. Even if you don't know the exact meaning of the word, you should be able to use the context to get a general idea of what the word means.

****Because Vocabulary in context questions can most always be solved quickly, you should always do these questions first!****

Steps to Solve Vocabulary In Context Questions:

Step 1. _____

Step 2. _____

Step 3. _____

Step 4. _____

Step 5. _____

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****Because Vocabulary in context questions can most always be solved quickly, you should always do these questions first!****

Steps to Solve Vocabulary In Context Questions:

It's important that students come up with a correct prediction for the word so that they do not get confused on these questions.

Step 1. *Go to the passage and cross out the word in question*

Step 2. *Read the lines before and after to understand the context*

Step 3. *Look for CLUES and TRIGGERS*

Step 4. *Cover the answer choices and predict*

Step 5. *Use POE*

Student Page 120 / Reading Slides 21-22

Lead Phrase Questions:
Many specific and literal reading comprehension questions do not contain a line number. However, this does not mean that these questions are more difficult or any less straightforward. For instance, if a question asks about the "Bronze Age" you would naturally go to the passage and look for the words "Bronze Age." This is the lead phrase that will help you find the answer to the question.

Circle the lead word/phrase in the following example questions:

The author suggests that mystery writers tend to

According to the passage, which of the following
is unique to Russian literature of the 19th century.

The author of the passage suggests that he was
able to publish his first book because

In the passage, the invention of the wheel is
compared to

In each question above, a lead word is there to tell you where in the passage to look for the answer. The good news for you is that the questions will come in roughly chronological order. So, you can often use the line reference questions to help you find the correct place in the passage to look for the lead word.

Just like with line reference questions, you will usually need to look a few lines before and after the lead word to understand the full context. Use the same strategies to answer the question in your own words and then use process of elimination.

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      The author suggests that **mystery writers** tend to

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      is unique to **Russian literature of the 19th century**.

      The author of the passage suggests that he was
      able to publish his **first book** because

      In the passage, the **invention of the wheel** is
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Student Page 121 / Reading Slides 23

Reasoning Questions

Reasoning Questions
- Reasoning questions are simply two-step questions.
- They ask you to find the information in the passage and then figure out how or why the author uses that information.
- Reasoning questions test what the author says or means while literal comprehension questions test what the passage says or means.
- These questions are typically harder than literal comprehension questions so it's usually a good idea to save these until the end
- Reasoning questions typically do not ask about the passage itself, but rather the author's views and intent
- Cover the answers and write your own prediction whenever possible
- When using process of elimination, look out for trap answer choices

1. Strengthen/Weaken Questions
Most short passages that contain an argument of some kind will ask you a question about how to make the author's point better or worse. Make sure you know whether the ACT wants you to help the author by providing more evidence to support his or her point, or if they want you to provide contradictory information to attack the author's position.

Here's an example of what a question might look like.

> If true, the author's argument would be most weakened
> by which of the following statements?
>
> The author's argument would most likely be strengthened
> if it were true that…

Before answering these questions, you must know the main point of the passage and what side you need to take. Then use process of elimination to find your answer.

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Before answering these questions, you must know the main point of the passage and what side you need to take. Then use process of elimination to find your answer.

Inference Questions

The definition of an inference is a reasonable conclusion based upon analysis of available evidence. Police investigators, scientists and engineers all must make inferences in their jobs each day…but these are not the type of inferences the ACT wants from you.

The ACT wants you to infer something that MUST be true based on what you have read. Wrong answers will either be directly stated in the passage or go way beyond the level of inference the ACT is looking for. When you look at the answer choices, try to find the "one-step inference," something that is just a small step beyond what is directly stated.

Here is an example. Let's say the passage stated that…

Ms. Nelson came to class this morning with wet hair.

What can be inferred from the preceding statement?

A. She ran through the sprinklers
B. She was sweating from the gym
C. She showered before class
D. Her hair is not dry

According to THE ACT (D) would be the answer.

All we can infer is that sometime between when she woke up and when she came to class, Ms. Nelson's hair came into contact with liquid and is therefore not currently dry. Would a detective infer that Ms. Nelson probably took a shower before coming to work? Of course, but for the purpose of the ACT, that inference would be wrong.

Remember, these types of questions will be asking you to find the *best* answer, not the *right* answer. Unfortunately, it is often difficult to write in our own prediction on these types of questions. So be careful and use process of elimination.

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Here is an example. Let's say the passage stated that…

Inference questions are some of the few on the test that lower scoring students often do better than higher scoring students.

This is because these questions do not require high level analysis, but rather ask students to interpret one BABY-STEP beyond what the passage actually says.

We suggest teachers demonstrate this concept using the following example.

Ms. Nelson came to class this morning with *wet hair.*

What can be inferred from the preceding statement?

A. She ran through the sprinklers
B. She was sweating from the gym
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Remember, these types of questions will be asking you to find the *best* answer not the *right* answer. Unfortunately, it is often difficult to write in our own prediction on these types of questions. So be careful and use process of elimination.

Author Agreement/Response Questions

These questions expect you to think about how the author would respond to a certain statement. Do they expect you to read the author's mind? No, therefore the answers to these questions lie in your main idea statement. Just like inference questions, take care not to go too far with your answers.

 "Except" Questions

"Except" questions are very tedious as they are basically many literal comprehension questions rolled into one. Instead of asking which of the answer choices is supported by the passage, except questions ask you which is NOT supported by the passage. Therefore, to answer these questions correctly, you have to go back to the passage and cross out the four answers that ARE mentioned or that you can find support for.

Because these questions are often very time consuming, it is never a bad idea to save these questions until the end.

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Because these questions are often very time consuming, it is never a bad idea to save these questions until the end.

Again, agreement questions require students to understand the author's argument in the same way as the weaken/strengthen questions above.

Students should make a written note of the relationship between the items in the passage, and then match the answer choices to that prediction. Students should expect no more than one of these.

Student Page 124 / Reading Slides 28

Big Picture Questions
- Although there are two main question types for long passage reading comprehension, a third question type also exists.
- These questions can be called general questions because they ask about the passage as a whole.
- These questions exist to make sure that you understand the gist and the primary purpose of the passage.
- Because of this, always save these questions for LAST!
- By the time you get around to answering these questions, you will have read the passage multiple times and hopefully have a very good idea about the general purpose of the passage.

Examples of general questions include:

"The tone of the author can best be described as…"

"The main point of the passage is that…"

The Best way to Predict on Tone Questions:

1.
_____
_____

2.
_____
_____

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Examples of general questions include:

The tone of the author can best be described as

The main point of the passage is that

The Best way to Predict on Tone Questions (blank for students):

1. Is the author positive, negative, or neutral about the subject?

2. Does the author use analysis or emotion?

<u>**Student Page 125 / Reading Slides 29-30**</u>

Reading Comprehension Question Type Drill

Take a look at some examples, which of the following are literal questions and which are reasoning?

1. In line 8, vacuous most nearly means
(L/R)

2. Which of the following best describes how the author would feel about nuclear power?
(L/R)

3. In lines 13-18, "scientist argue...facts" suggest that Nobel Prize winners
(L/R)

4. Which of the following statements best describes the author's opinion of baseball at the turn of the 20th century?
(L/R)

5. The discussion in lines 34-41 implies that the treatment of children in 19th century Russia
(L/R)

On reasoning questions, remember that THE ACT will be trying to trick you! While a question may ask about a particular point in the passage, the reason that the author uses this point could lie elsewhere in the passage.

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(L/**R**)

3. In lines 13-18, "scientist argue…facts" suggest that Nobel Prize winners
(**L**/R)

4. Which of the following statements best describes the author's opinion of baseball at the turn of the 20th century?
(L/**R**)

5. The discussion in lines 34-41 implies that the treatment of children in 19th century Russia
(**L/R**)

On reasoning questions, remember that the ACT will be trying to trick you! While a question may ask about a particular point in the passage, the reason that the author uses this point could lie elsewhere in the passage.

Student Page 126

Reasoning Question Puzzle-Fit

If you've ever practiced ACT reading comprehension passages, you've probably noticed that the questions seem repetitive. In fact, they are. The ACT uses long passages to test your ability to identify and <u>comprehend only a FEW key sentences in the passage</u>. Then, all of the **REASONING** questions surround these few ideas.

So What?
1. After you've finished answering all the reasoning questions, go back and look at your answers. The answer choices that you've circled should fit together - they should all agree with one another. **These correct answers should seem repetitive and fit within the author's thesis.**

2. If they don't, go back and see which ones stand out because they don't fit in your puzzle.

3. If you can't see a pattern, you've probably misunderstood or failed to identify the key points of the author's argument

Reasoning Question Puzzle-Fit

If you've ever practiced ACT reading comprehension passages, you've probably noticed that the questions seem repetitive. In fact, they are. The ACT uses passages to test your ability to identify and comprehend a FEW key sentences in the passage. Then, all of the **REASONING** questions surround these few ideas.

ACT reasoning questions are extremely repetitive, and therefore patterns emerge. Often, these questions are either "feast or famine" for students. If students correctly identify and understand the thesis and key argumentative statements in the passage, they will likely get all reasoning questions correct. However, if they fail to understand these couple of sentences, they will likely miss most if not all of these questions.

We suggest that after practicing a passage as a class, students review the answers to reasoning questions to see if these answers agree with another.

So What?

1. After you've finished answering all the reasoning questions, go back and look at your answers. The answer choices that you've circled should fit together in that they all agree with one another. **These correct answers should seem repetitive and fit within the author's thesis.**

2. If they don't, go back and see which ones stand out as not fitting in your puzzle.

3. If you can't see a pattern, you've probably misunderstood or failed to identify the key points of the author's argument

ACT Reading Mini Lesson #6- Don't Let the ACT Guide Your Brain

Step 5. _____

Like they do in other sections of the test, THE ACT will give you many answers that sound good to trip you up. To avoid these traps, cover the answer choices and predict in the same method as you would for sentence completions. Don't plug in the answer choices!

Step 6. _____

Trust your prediction and look for trap answers. Remember, if you can eliminate one answer it pays to guess.

Based on the passage above, answer the following questions in your OWN WORDS

In the passage, line 6, "styled" most nearly means

_____
_____
_____

In lines 10–25, the author notes that baseball serves as a venue for…

_____
_____
_____

In lines 31–33, the author mentions the dangers involved in swimming and skating so as to

_____
_____
_____

The author's tone in lines 41–44 could most accurately be characterized as

_____
_____
_____

In lines 44–51, the author suggests that the participation of important businessmen

_____
_____
_____

In paragraph 4, the author argues that playing baseball helps the youth by

_____
_____
_____

ACT Reading Mini Lesson #6- Don't Let the ACT Guide Your Brain

This is the most important drill in this section, and it is essential that students learn how to think independently and critically about these questions.

These questions refer to the passage at the beginning of this section. The answers provided should give teachers a guideline for the type of answers students should be producing.

Step 5. *Answer the questions in your own words*
Like they do in other sections of the test, the ACT will give you many answers that sound good to trip you up. To avoid these traps, cover the answer choices and predict in the same method as you would for sentence completions. Don't plug in the answer choices!

Step 6. *Use process of elimination*
Trust your prediction and look for trap answers. Remember, if you can eliminate one answer it pays to guess.

Based on the passage above, answer the following questions in your OWN WORDS

In the passage, line 6, "styled" most nearly means
Answer: *named/called/deemed*

In lines 10–25, the author notes that baseball serves as a venue for….
Answer: *relaxation, amusement, physical exercise, reflex development, fun*

In lines 31–33, the author mentions the dangers involved in swimming and skating so as to
Answer: *To illustrate the point that there are things much more dangerous than baseball*

The author's tone in lines 41–44 could most accurately be described as…
Answer: *Prideful/patriotic*

In lines 44–51, the author suggests that the participation of important businessmen
Answer: *Proves that baseball is an important national pastime*

In paragraph 4, the author argues that playing baseball helps the youth by
Answer: *teaching them lessons that will apply in politics and business*

Student Page 128 / Reading Slides 32-33

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ACT Reading Mini Lesson #7-Reading Comprehension Traps

The key to answering reading comprehension questions correctly is to not fall into the ACT's traps! There are many ways to trick you on reading comprehension, but these traps are almost always easy to spot if you know what you are looking for.

1. _____
Often the ACT will make answer choices deceptive, meaning that the statement may be true or may be related to the passage but does not answer the question that is asked.
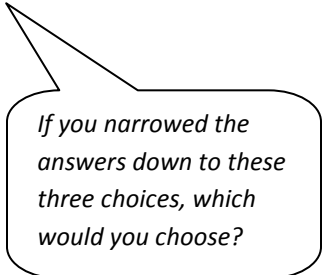
2. _____
This trap is often the easiest to spot because extreme words are difficult to miss. Absolute statements are almost always wrong. If anyone might get offended by an answer choice, it isn't correct. Words like, *best, never, must, most, worst, totally, always, only, cannot, all*...etc signal extreme language and are never correct. When you see these words, eliminate the answer.

> **Example:**
>
> The author mentions his visit to the store (lines 13-19) primarily to show that…
>
> (A) California avocados are better than any other avocado in the world
> (B) Markets often do not stock the best produce
> (C) Smaller avocadoes are always more flavorful than larger ones

If you narrowed the answers down to these three choices, which would you choose?

3. _____
The ACT loves this one! These are statements that are true or that you could infer from the passage but are not explicitly stated. The ACT hopes these answers will trigger something you have learned and cause you to pick the wrong answer.

4. _____
Sometimes, The ACT will throw in wrong answers that are the exact opposite of what the passage says about a given subject. To spot this trap, make sure you read the entire answer choice.

5. _____
With this trap, part of the answer will be correct while another part will be wrong. The ACT hopes you will only read the first part, see that it's correct and move on. Be sure to read the entire answer before choosing it

Reading Comprehension Traps

The key to answering reading comprehension questions correctly is to not fall into The ACT's traps! There are many ways to trick you on reading comprehension but these traps are almost always easy to spot if you know what you are looking for.

Reading Section Traps
1. Deceptive Language
Often the ACT will make answer choices deceptive, meaning that the statement may be true or may be related to the passage but does not answer the question that is asked.

2. Extreme Words
This trap is often the easiest to spot because extreme words are difficult to miss. Absolute statements are almost always wrong. If anyone might get offended by an answer choice, it isn't correct. Words like, *best, never, must, most, worst, totally, always, only, cannot, all*…etc signal extreme language and are never correct. When you see these words, eliminate the answer.

Example:

The author mentions his visit to the store (lines 13-19) primarily to show that…

(A) California avocados are better than any other avocado in the world
(B) Markets often do not stock the best produce
(C) Smaller avocadoes are always more flavorful than larger ones

3. True but not stated in the passage
The ACT loves this one! These are statements that are true or that you could infer from the passage but are not explicitly stated. The ACT hopes these answers will trigger something you have learned and cause you to pick the wrong answer.

4. Exact opposite of what is stated in the passage
Sometimes, the ACT will throw in wrong answers that are the exact opposite of what the passage says about a given subject. To spot this trap, make sure you read the entire answer choice.

5. Half-right, half-wrong
With this trap, part of the answer will be correct while another part will be wrong. The ACT hopes you will only read the first part, see that it's correct and move on. Be sure to read the entire answer before choosing it

Emphasize to the students that these traps can be easily avoided if they simply cover the answer choices and write a prediction for the answer to the question.

Some of these traps are easy to identify, while others are not.

Traps that higher-scoring students typically fall for:
1. Deceptive Language
2. True but not stated in the passage

Traps that lower-scoring students typically fall for:
1. Extreme words
2. Half-right, half-wrong
3. Deceptive language

The extreme words trap is the easiest to avoid!

Student Page 129 / Reading Slides 34-35

ACT Reading Mini Lesson #8-Natural Science Passages Practice

The passage is adapted from a description of the present appearance and geological history of a particular volcano. The passage is written by the American naturalist John Muir.

Shasta is a fire-mountain, an old volcano gradually accumulated and built up into the blue deep of the sky by successive eruptions of ashes and molten lava which, shot high in the air and falling in darkening showers, and flowing from chasms and craters, grew outward and upward like the trunk of a knotty, bulging tree. Not in one grand convulsion was Shasta given birth, nor in any one special period of volcanic storm and stress, though some mountains more than a thousand feet in height have been cast up like molehills in a night.

Sections cut by the glaciers, displaying some of the internal framework of Shasta, show that comparatively long periods of quiescence intervened between many eruptions. During these periods of calm the cooling lavas ceased to flow, and took their places as permanent additions to the bulk of the growing mountain. Thus eruption succeeded eruption with alternating haste and deliberation, until Mount Shasta surpassed even its present sublime height.

Then followed a strange contrast. The glacial winter came on. The sky that so often had been darkened with storms of cinders and ashes and lighted by the glare of volcanic fires was filled with snow, which, descending upon the cooling mountain, gave birth to glaciers that eventually formed one grand conical glacier—a creeping mantle of ice upon a fountain of smoldering fire, crushing, grinding, and remodeling the entire mountain from summit to base.

How much effect the glaciers wielded we have no means of determining. The porous, crumbling rocks of Shasta are poorly adapted to provide a record of the mountain's glacial past. This much, however, is plain: the summit of the mountain was considerably lowered and the sides deeply grooved during the time when Shasta served as a center of dispersal for the glaciers of the entire region.

When at length the glacial period began to draw near its close, the ice mantle gradually melted off around the base of the mountain. In receding and breaking up into its present fragmentary condition, the once great glacier left behind it a ring of irregular heaps of moraine matter on which forests now grow. The receding glacier left behind porous gravel and sand that yields freely to the power of running water. In fact, several centuries ago when an eruption melted massive quantities of ice and snow, a flood of extraordinary magnitude washed the sand and gravel from the higher slopes to the mountain's base, creating conspicuous delta-like beds around the base. Upon these flood-beds of soil flowery chaparral now grows.

Thus, by forces seemingly antagonistic and destructive, Nature accomplishes her designs—now a flood of fire, now a flood of ice, now a flood of water. Then in the fullness of time an outburst of organic life—Shasta the fire-mountain becomes forest

Line
(5)
(10)
(15)
(20)
(25)
(30)
(35)
(40)
(45)

and garden, with all its wealth of fruit and flowers, and the air
(50)   *stirred into one universal hum by rejoicing insects.*

10. What can be inferred from lines 6-9?

A. All mountains form in the same way.
B. Volcanoes are all under one thousand feet in height.
C. Most mountains take a long time to form.
D. Different mountains are created in unique ways.

11. The term "deliberation" in line 16 most nearly means

A. a slow, steady pace
B. contemplation
C. disagreement
D. indecisiveness

12. Which of the following is NOT a function of the phrase "glacial winter" in line 18?

A. to dramatize the process of glaciation
B. to refer to an Ice Age
C. to suggest a marked contrast from periods of volcanic activity
D. to describe a particularly cold winter of long ago

13. From the passage, it's possible that Muir bases his version of Mount Shasta's geological history primarily on the basis of

A. the mountain's flora and fauna
B. the position and types of rock formations on the mountain
C. settler's histories
D. his knowledge of other mountains

14. Based on the passage, which of the following topics would most interest Muir?

A. New data on earthquakes around Mount Shasta
B. A history of attempts to climb Mount Shasta
C. Local legends regarding the mountain
D. An anthropological study of Native American tribes living near Shasta

15. Which of the following best expresses the theme of this passage?

A. "Time Passes"
B. "One Mountain Long Ago"
C. "Shasta's Majestic Height"
D. "Shasta: A Study in Contradictory Forces"

The passage is adapted from a description of the present appearance and geological history of a particular volcano. The passage is written by the American naturalist John Muir.

Shasta is a fire-mountain, an old volcano gradually
accumulated and built up into the blue deep of the sky by
successive eruptions of ashes and molten lava which, shot high in
Line   the air and falling in darkening showers, and flowing from chasms
(5)   and craters, grew outward and upward like the trunk of a knotty,
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ring of irregular heaps of moraine matter on which forests now
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C. disagreement
D. indecisiveness

12.   Which of the following is NOT a function of the phrase "glacial winter" in line 18?

A. to dramatize the process of glaciation
B. to refer to an Ice Age
C. to suggest a marked contrast from periods of volcanic activity
D. to describe a particularly cold winter of long ago

13.   From the passage, it's possible that Muir bases his version of Mount Shasta's geological history primarily on the basis of

A. the mountain's flora and fauna
B. the position and types of rock formations on the mountain
C. settler's histories
D. his knowledge of other mountains

14.   Based on the passage, which of the following topics would most interest Muir?

 A. New data on earthquakes around Mount Shasta
 B. A history of attempts to climb Mount Shasta
 C. Local legends regarding the mountain
 D. An anthropological study of Native American tribes living near Shasta

15.   Which of the following best expresses the theme of this passage?

A. "Time Passes"
B. "One Mountain Long Ago"
C. "Shasta's Majestic Height"
D. "Shasta: A Study in Contradictory Forces"

Student Page 131

ACT Reading Mini Lesson #9-Prose Fiction Strategy

Prose Fiction Passages usually ask about:

1. _____
2. _____
3. _____
4. _____

Prose Fiction passages usually have three types of characters:

The Protagonist: _____

The Antagonist: _____

The Foil:_____

*Note: ACT fiction passages often have a foil that you will need to identify

Steps to solving questions based on a fiction passage:

Step 1. _____

Step 2. _____

Step 3. _____

Step 4. _____

Step 5. _____

Fiction passages will ask you about tone, mood and motivation rather than focusing on literal comprehension questions.

ACT Reading Mini Lesson #9-Prose Fiction Strategy

Students should expect to see exactly ONE fiction passage, and this will usually be the longest passage that is included in the reading section.

Usually, ACT fiction passages will have some kind of abbreviate version of a complete story arc, including rising action, climax, and falling action

ACT fiction passages almost always include a protagonist and a foil!

Remind students that they should answer fiction passages with specific/fastest questions at the beginning, and the least specific/slowest questions at the end.

When students skim fiction passages, they should be sure to identify key characters and plot points. Remind students that the EASIEST WAY TO SKIM is to READ DIALOGUE, which provides the best and fastest clues as to what's happening.

There is still one type of reading question that we have not yet discussed: fiction passages. These are not harder than other types of reading passages but you do have to take a slightly different approach to solving them.

Prose Fiction Passages usually ask about (blank for students):

1. Plot
2. Characters
3. Setting
4. Theme

Prose Fiction passages usually have three types of characters:

The Protagonist: hero, main character

The Antagonist: villain

The Foil: person or situation that exists to tell the reader something about the protagonist

*Note: ACT fiction passages often have a foil that you will need to identify

Steps to solving questions based on a fiction passage:

Fiction passages will ask you about tone, mood and motivation rather than focusing on literal comprehension questions.

Step 1: *Read the blurb at the beginning of the passage*

Step 2: *Skim the passage so you understand the plot and introduce yourself to the characters*

Step 3: *Write down a short summary of the plot*

Step 4: As *you read, watch out for figurative language and the author's use of literary devices. You can bet that the ACT will ask you about these*

Step 5: *Make mental or actual notes about the characters. Think about who is the protagonist, antagonist, and foil.*

| Student Pg. 132 | Reading Slides 36-39 |

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ACT Reading Mini Lesson #10-Prose Fiction Passages Practice

In the following passage, the author describes Wing Biddlebaum, a mysterious loner who lives near the town of Winesburg, Ohio.

Upon the half-decayed veranda of a small frame house that
stood near the edge of a ravine near the town of Winesburg, Ohio,
a fat little old man walked nervously up and down. Across a long

Line   field that had been seeded for clover but that had produced only
(5)   a dense crop of yellow mustard weeds, he could see the public
highway along which went a wagon filled with berry pickers
returning from the fields. The berry pickers, youths and maidens,
laughed and shouted boisterously. A boy clad in a blue shirt
leaped from the wagon and attempted to drag after him one of the
(10)   maidens, who screamed and protested shrilly. The feet of the boy
in the road kicked up a cloud of dust that floated across the
face of the departing sun.

Wing Biddlebaum, forever frightened and beset by a ghostly
band of doubts, did not think of himself as in any way a part of
(15)   the life of the town where he had lived for twenty years. Among
all the people of Winesburg but one had come close to him. With
George Willard, son of Tom Willard, the proprietor of the New
Willard House, he had formed something like a friendship . George
Willard was the reporter on the Winesburg Eagle and sometimes in
(20)   the evenings he walked out along the highway to Wing Biddlebaum's
house. Now as the old man walked up and down on the veranda, his
hands moving nervously about, he was hoping that George Willard
would come and spend the evening with him. After the wagon
containing the berry pickers had passed, he went across the field
(25)   through the tall mustard weeds and climbing a rail fence peered
anxiously along the road to the town. For a moment he stood thus,
rubbing his hands together and looking up and down the road, and
then, fear overcoming him, ran back to walk again upon the porch
on his own house.

(30)   Wing Biddlebaum talked much with his hands. The slender
expressive fingers, forever active, striving to conceal
themselves in his pockets or behind his back, came forth and
became the piston rods of his machinery of expression.

The story of Wing Biddlebaum is a story of hands. Their
(35)   restless activity, like unto the beating of the wings of an
imprisoned bird, had given him his name. Some obscure poet of the
town had thought of it. The hands alarmed their owner. He wanted
to keep them hidden away and looked with at the quiet
inexpressive hands of other men who worked beside him in the
(40)   fields, or passed, driving sleepy teams on country roads.

The story of Wing Biddlebaum's hands is worth a book in
itself. Sympathetically set forth it would tap many strange,
beautiful qualities in obscure men. It is a job for a poet. In
Winesburg the
(45)   hands had attracted attention merely because of their
activity. With them Wing Biddlebaum had picked as high as a
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(45) hands had attracted attention merely because of their
activity. With them Wing Biddlebaum had picked as high as a
hundred and forty quarts of strawberries in a day. They became

his distinguishing feature, the source of his fame. Also they
made more grotesque a grotesque and elusive individuality. The
(50)   town was proud of the hands of Wing Biddlebaum in the same spirit
in which it was proud of Banker White's new stone house and
Wesley Moyer's bay stallion, Tony Tip, that had won the
two-fifteen trot at the fall races in Cleveland.

Practice with Cover and Predict

1. *The first sentence of the passage introduces a sense of*

    _____
    _____

2. *The effect of the description of the berry pickers in their cart is to*

    _____
    _____

3. *The word "beset" (line 13) most nearly means*

    _____
    _____

4. *The phrase "something like a friendship" is used to tell the reader that*

    _____
    _____

5. *Why might Wing have waited for the berry pickers to pass before going out to look for George Willard?*

    _____
    _____

6. *Wing's name is a result of…*

    _____
    _____

7. *The comparison of Wing Biddlebaum to Banker White's stone house and Wesley Moyer's stallion helps support..*

    _____
    _____

8. *The first two sentences of the last paragraph imply that…*

    _____
    _____

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Practice with Cover and Predict

1. The first sentence of the passage introduces a sense of
Answer: despair

2. The effect of the description of the berry pickers in their cart is to
Answer: Demonstrate a contrast

3. The word "beset" (line 13) most nearly means
Answer: plagued

4. The phrase "something like a friendship" in line 18 indicates that
Answer: Wing is awkward to such a degree that he cannot form meaningful relationships even with people he likes.

5. Why might Wing have waited for the berry pickers to pass before going out to look for George Willard?
Answer: He didn't want anyone to notice him.

6. Wing's name is a result of…
Answer: a symbol for the way his hands move

7. The comparison of Wing Biddlebaum to Banker White's stone house and Wesley Moyer's stallion helps support…
Answer: Wing's status in the town as a curiosity

8. The first two sentences of the last paragraph imply that…
Answer: the story of Wing's hands has meaning and significance beyond Wing

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ACT Reading Mini Lesson #11-More Fiction Practice

This passage is excerpted from the novel O! Pioneers by Willa Cather, which is set in 19th century Nebraska.

Line
(5)

(10)

(15)

(20)

(25)

(30)

(35)

(40)

(45)

On Wednesday morning Carl got up before it was light, and
stole downstairs and out of the kitchen door just as old Ivar was
making his morning ablutions at the pump. Carl nodded to him and
hurried up the draw, past the garden, and into the pasture where
the milking cows used to be kept.

The dawn in the east looked like the light from some great
fire that was burning under the edge of the world. The color was
reflected in the globules of dew that sheathed the short gray
pasture grass. Carl walked rapidly until he came to the crest of
the second hill, where the Bergson pasture joined the one that
had belonged to his father.

There he sat down and waited for the sun to rise. It was
just there that he and Alexandra used to do their milking
together, he on his side of the fence, she on hers. He could
remember exactly how she looked when she came over the
close-cropped grass, her skirts pinned up, her head bare, a
bright tin pail in either hand, and the milky light of the early
morning all about her. Even as a boy he used to feel, when he saw
her coming with her free step, her upright head and calm
shoulders, that she looked as if she had walked straight out of
the morning itself. Since then, when he had happened to see the
sun come up in the country or on the water, he had often
remembered the young Swedish girl and her milking pails.

Carl sat musing until the sun leaped above the prairie, and
in the grass about him all the small creatures of day began to
tune their tiny instruments. Birds and insects without number
began to chirp, to twitter, to snap and whistle, to make all
manner of fresh shrill noises. The pasture was flooded with
light; every clump of ironweed and snow-on-the-mountain threw a
long shadow, and the golden light seemed to be rippling through
the curly grass like the ocean tide sweeping in .

He crossed the fence into the pasture that was now the
Shabatas' and continued his walk toward the pond. He had not gone
far, however, when he discovered that he was not the only person
abroad. In the draw below, his gun in his hands, was Emil,
advancing cautiously, with a young woman beside him. They were
moving softly, keeping close together, and Carl knew that they
expected to find ducks on the pond.

At the moment when they came in sight of the bright spot of
water, he heard a whirr of wings and the ducks shot up into the
air. There was a sharp crack from the gun, and five of the birds
fell to the ground. Emil and his companion laughed delightedly,
and Emil ran to pick them up. When he came back, dangling the
ducks by their feet, Marie held her apron and he dropped them
into it.

As she stood looking down at them, her face changed. She
took up one of the birds, a rumpled ball of feathers with the
blood dripping slowly from its mouth, and looked at the live
color that still burned on its plumage.

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1. The word "stole" in line 2 most nearly means

A. moved stealthily
B. clambered noisily
C. did illicitly
D. stumbled clumsily

2. From the passage, it is possible to infer that Carl is which of the following?

A .a small child
B. a young man returning to his childhood home
C. an old man about to go on a journey
D. naive about the farming life

3. What is Alexandra's relationship to Carl?

 A. sister
 B. neighbor
 C. daughter
 D. cousin

4. In the third paragraph, the author uses Carl's memories to

 A. explain how Carl first came to rural Nebraska
 B. provide a sense of Carl's feelings for Alexandra
 C. highlight the beauty of the fields
 D. indicate that Carl feels lonely and isolated

5. In lines 28-31, the metaphor comparing the morning light to the tides of the ocean does all of the following EXCEPT

 A. suggest that Carl has seen a lot of the world beyond the farm
 B. suggest that the scene can be meaningful even to those who have not seen morning light on the prairie
 C. suggest that Carl wishes he were at the ocean
 D. imply the calmness of the scene

6. The reference to "the pasture that was now the Shabatas'" in lines 32-33 suggests that

 A. the old neighbors were bad farmers
 B. Carl is mistaken in his memories
 C. significant time has passed since Carl's last visit
 D. the farms are dwindling away and won't exist much longer

7. Emil's shooting of the ducks contrasts sharply with which of the following in this passage?

A. Carl's feeling of hunger
B. the pastoral depiction of farm life
C. the description of the sunset
D. the environmental dangers of farm life

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8. The description of the bird as "a rumpled ball of feathers" in line 47 is an example of a

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A. metaphor
B. paradox
C. conflict
D. theme

9. **The tone of this passage is best described as**

A. reflective, then wistful
B. cheerful, then troubled
C. distracted, then confused
D. nostalgic, then uneasy

Student Page 136

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287

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D. theme

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Further Practice

The following chart outlines the segmentation of the reading sections of the released ACT practice exams. Using this chart, students can focus on the types of passages that they struggle most on, and can track their progress on each type of passage.
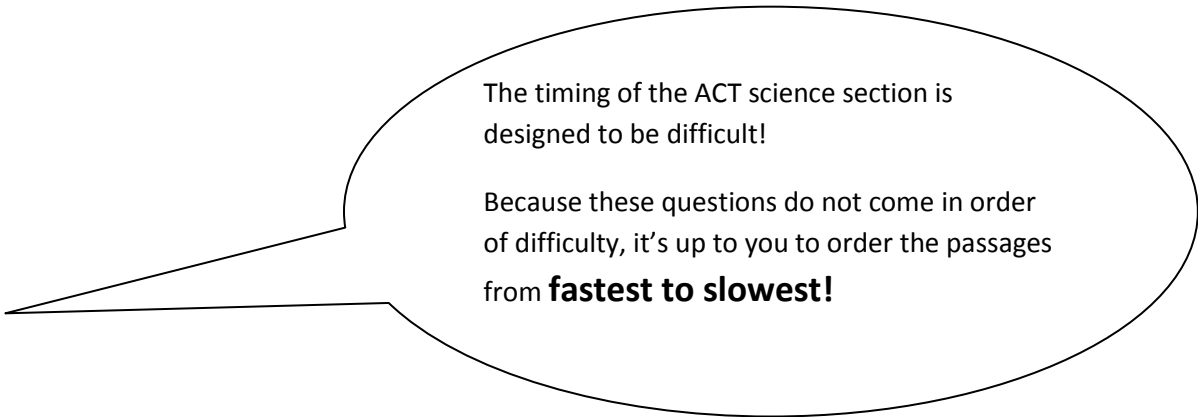
Question Type	ACT Practice Test #1	ACT Practice Test #2	ACT Practice Test #3
Prose Fiction	Section 3 #'s 1-10	Section 3 #'s 1-10	Section 3 #'s 1-10
Social Science	Section 3 #'s 11-20	Section 3 #'s 11-20	Section 3 #'s 11-20
Humanities	Section 3 #'s 21-30	Section 3 #'s 21-30	Section 3 #'s 21-30
Natural Science	Section 3 3's 31-40	Section 3 3's 31-40	Section 3 3's 31-40

ACT Science

ACT Science Mini Lesson #1-About ACT Science Info

The science test will consist of 7 passages that will each be followed by 5-7 questions. The passages will cover content from biology, chemistry, and physical sciences. They will vary in terms of organization and difficulty. You will have 40 minutes to answer 35 questions.

The timing of the ACT science section is designed to be difficult!

Because these questions do not come in order of difficulty, it's up to you to order the passages from **fastest to slowest!**

The Science Passages Fall in Three General Categories

1. _____

You will be provided with at least one chart, graph, illustration that will test your ability to understand scientific information presented. There will be Three c/g passages, and each one will have five questions.

2. _____

Several experiments and their results will be given to see how you follow and interpret procedures. There will be three experiments passages, and each will have six questions

3. _____

These passages will provide you with the viewpoints from multiple scientists regarding a scientific argument. You will be asked about the conflict and the evidence supporting each view. You could also be asked to speculate about what kind of information could potentially solve the conflict.

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Students need to understand that the ACT "SCIENCE" test, does not actually test much science.

Rather, the science test is a reading comprehension exam where science is the subject.

Again, these problems are structured such that students struggle with time!

Charts and graphs passages are typically easy, and can be done quickly, while conflicting scientist passages are more difficult and take much more time to solve.

The Science Passages Fall in Three General Categories

1. Charts and Graphs (15 questions, 3 passages)

You will be provided with at least one chart, graph, illustration that will test your ability to understand scientific information presented. There will be Three c/g passages, and each one will have five questions.

2. Experiments (18 questions, 3 passages)

Several experiments and their results will be given to see how you follow and interpret procedures. There will be three experiments passages, and each will have six questions

3. Conflicting Scientists (7 Questions, 1 Passage)

These passages will provide you with the viewpoints from multiple scientists regarding a scientific argument. You will be asked about the conflict and the evidence supporting each view. You could also be asked to speculate about what kind of information could potentially solve the conflict.

Student Page 139 / Science Slides 3-4

ACT Science Mini Lesson #2-ACT Science Vocab

Although the ACT science section is not a true science exam, you will still benefit from an understanding of some key scientific terms. That being said, **DO NOT MEMORIZE!**

Absorption	**Acid**
Atom	**Base**
Calorie	**Catalyst**
Chemical reaction	**Chlorophyll**
Chromosome	**Compound**
Control	**Constant**
Density	**Diffusion**
DNA	**Element**
Evolution	**Gas**
Kinetic	**Liquid**
Malleable	**Mass**
Molecule	**Nucleus**
Organic	**Permeability**
pH	**Photosynthesis**
Protein	**Radioactive**
Reflection	**Solid**
Solution	**Solvent**
Viscous	**Weight**

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ACT Science Mini Lesson #2-ACT Science Vocab (Science Slides 5-7)

Although the ACT science section is not a true science exam, you will still benefit from an understanding of some key scientific terms. That being said, **DO NOT MEMORIZE!**

Absorption-process by which products of digestion move from small intestine to blood	**Acid-** a compound that dissociates in water to form hydrogen ions
Atom- has a nucleus that contains neutrons and protons (positive charge); electrons (negative charge)	**Base-** a compound that forms a salt and water following reaction with an acid
Calorie- the amount of heat needed to raise the temperature of one gram of water one degree Celsius	**Catalyst-** a substance that changes (usually speeds up) the rate of a chemical reaction without itself being permanently changed
Chemical reaction- any process that results in the production of different substances with new properties	**Chlorophyll-** a complex green pigment that captures light energy, for use in photosynthesis
Chromosome- a structure, composed primarily of DNA, that contains the genes	**Compound-** two or more elements combined chemically in definite proportions by weight
Control- Treatment group used for comparison	**Constant-** Variable that stays the same
Density- mass per unit of volume	**Diffusion-** the movement of molecules from a region of greater concentration to a region of lesser concentration
DNA-(deoxyribonucleic acid) the hereditary material in cells	**Element-** a substance that cannot be chemically changed into a simpler substance; all atoms of an element have the same number of protons
Evolution- change over time	**Gas-** a substance that takes the shape and fills the volume of its container
Kinetic- energy the energy of motion	**Liquid-** substance that takes the shape of the vessel that contains it, does not necessarily fill its container
Malleable- the ability of a metal to have its shape permanently changed by applying a force, e.g., hammering	**Mass-** the measure of the amount of matter in an object; the mass of an object remains the same regardless of the force of gravity
Molecule- the smallest unit of an element or a compound, 2+ atoms covalently bonded	**Nucleus-** the cell organelle that controls the cell's activities and contains DNA
Organic- relating to compounds that contain carbon and hydrogen	**Permeability-** the extent to which a membrane allows different molecules to pass through it
pH- a measure of the acidity of a solution; a pH of 7 is neutral, less than 7 is acidic, and greater than 7 is basic	**Photosynthesis-** the process in which energy is used to form carbohydrate and oxygen from carbon dioxide and water
Protein- complex organic molecule composed of a chain of amino acids	**Radioactive-** elements that emit particles and radiation during the spontaneous disintegration of their nuclei
Reflection- occurs when light bounces off a surface	**Solid-** matter that has a definite shape and volume
Solution- a homogeneous mixture formed when one substance dissolves in another	**Solvent-** a substance in which a solute dissolves to form a solution
Viscous- describes a material that flows slowly	**Weight-** the measure of the gravitational force that attracts an object; the weight of an object changes as the force of gravity changes

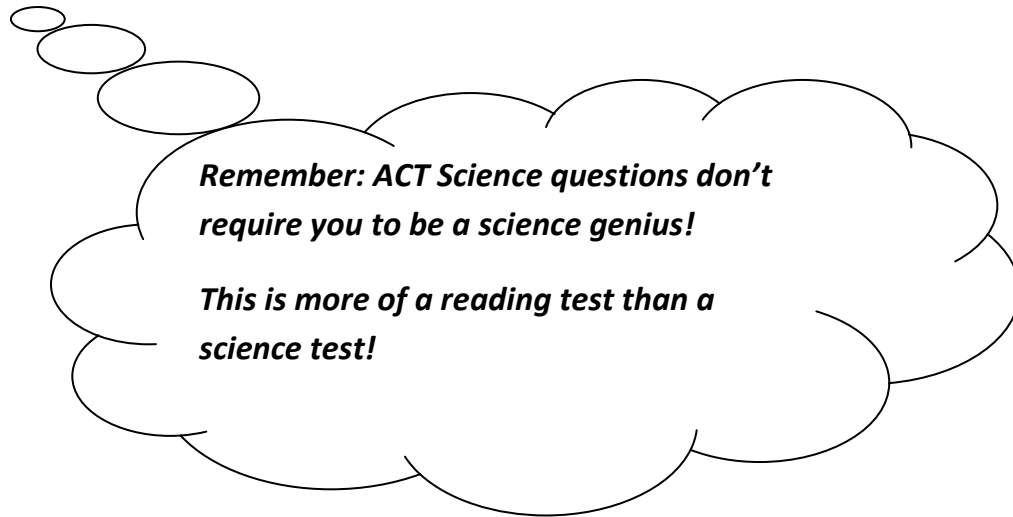## ACT Science Mini Lesson #3-Types of ACT Science Questions

1. _____

These questions will ask you to paraphrase certain parts of the passage. These are very similar to reading comprehension questions, and will usually focus on one sentence, paragraph or chart. You could be asked to consider the events of the passage and what the underlying assumptions may be. You also may have to look up a value on a chart.

2. _____

These questions are typically more detailed than the fetch questions because you will be asked to understand multiple pieces of the passage, and how they relate to one another. You may be asked *why* something happened or what is *going* to happen in the future.

3. _____

These questions will test your knowledge of the "big picture." These questions could ask you to relate information in the passage to other information, or ask about how the results would apply in the "real world."

Remember: ACT Science questions don't require you to be a science genius!

This is more of a reading test than a science test!

ACT Science Mini Lesson #3-Types of ACT Science Questions

Silly mistakes on "fetch" questions kill students' scores. Students need to make sure they take the time to answer these questions correctly. If they miss/guess on the more difficult questions, that's okay!

1. Fetch the answer

These questions will ask you to paraphrase certain parts of the passage. These are very similar to reading comprehension questions, and will usually focus on one sentence, paragraph or chart. You could be asked to consider the events of the passage and what the underlying assumptions may be. You also may have to look up a value on a chart.

2. Analyze based on the given info

These questions are typically more detailed than the fetch questions because you will be asked to understand multiple pieces of the passage, and how they relate to one another. You may be asked *why* something happened or what is *going* to happen in the future.

3. Generalize and make appropriate conclusions

These questions will test your knowledge of the "big picture." These questions could ask you to relate information in the passage to other information, or ask about how the results would apply in the "real world."

Remember: ACT Science questions don't require you to be a science genius!

This is more of a reading test than a science test!

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Ordering the Questions to Maximize Time

The science questions will not come in a specific order of difficulty. It will be up to you to decide which questions are easy, medium or difficult. Remember, all the questions are worth the same amount of points, so spend your time to avoid making careless mistakes on easy or medium questions.

Ordering the Questions

Fast/Easy Questions	**Slow/Hard Questions**
Ask about the passage/data	Require analysis and generalizations

Ordering the Questions to Maximize Time

The science questions will not come in a specific order of difficulty. It will be up to you to decide which questions are easy, medium or difficult. Remember, all the questions are worth the same amount of points, so spend your time to avoid making careless mistakes on easy or medium questions.
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Ordering Science Questions
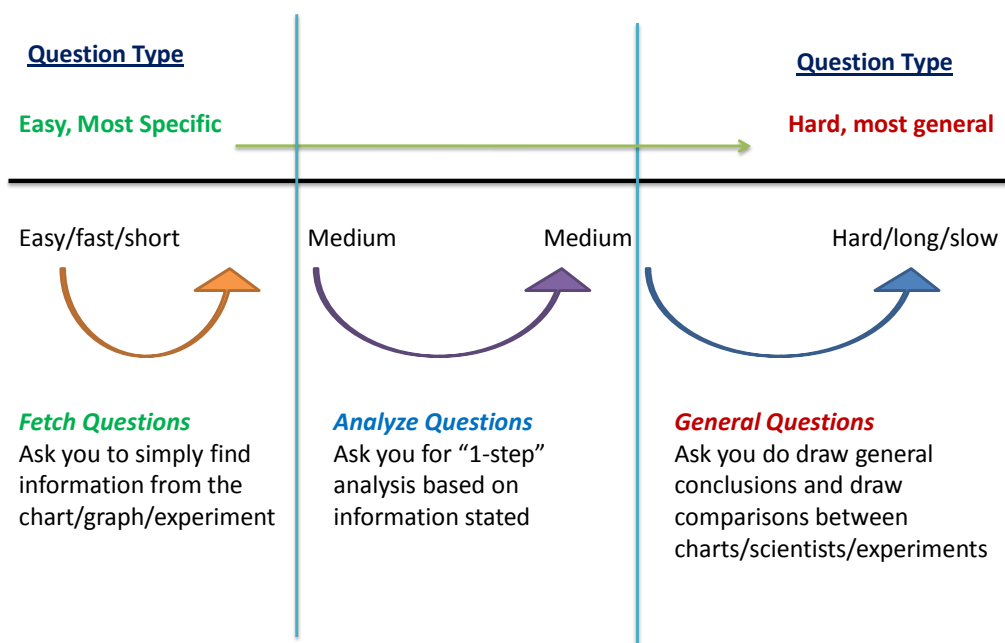
Question Type		Question Type
Easy, Most Specific		**Hard, most general**

Easy/fast/short   Medium   Medium   Hard/long/slow

Fetch Questions
Ask you to simply find information from the chart/graph/experiment

Analyze Questions
Ask you for "1-step" analysis based on information stated

General Questions
Ask you do draw general conclusions and draw comparisons between charts/scientists/experiments

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ACT Science Mini Lesson #4- More Types of Science Questions

Easy Questions: go grab the answer…(10 to 15 questions)

1. Look at the graph/chart/table Questions
These questions are relatively straight-forward, and should be answered first. These questions simply ask you to go back to the chart, table, or experiment, and fetch what the information says and means.

These questions ARE NOT designed to trick you, and you should always DO THESE FIRST. They are fast, easy, and points that you should make sure that you get.
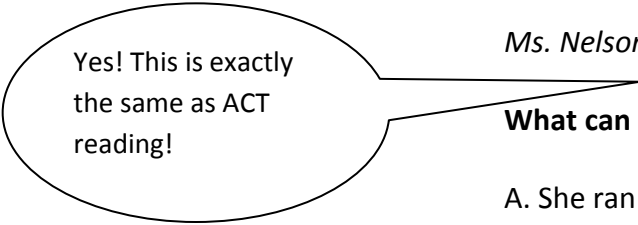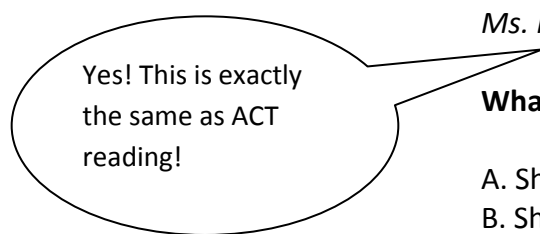
Medium Questions: analyze the information given…(15-20 questions)

1. Infer/Suggest/Imply Questions
The definition of an inference is a reasonable conclusion based upon analysis of available evidence. Police investigators, scientists and engineers all must make inferences in their jobs each day…but these are not the type of inferences the ACT wants from you.

The ACT wants you to infer something that MUST be true based on what you have read. Wrong answers will either be directly stated in the passage or go way beyond the level of inference that the ACT is looking for. When you look at the answer choices, try to find the "one-step inference," something that is just a small step beyond what is directly stated.

Here is an example. Let's say the passage stated that…

Yes! This is exactly the same as ACT reading!

Ms. Nelson came to class this morning with wet hair.

What can be inferred from the preceding statement?

A. She ran through the sprinklers
B. She was sweating from the gym
C. She showered before class
D. Her hair is not dry.

All we can infer is that sometime between when she woke up and when she came to class, Ms. Nelson's hair came into contact with liquid and is therefore not currently dry. Would a detective infer that Ms. Nelson probably took a shower before coming to work? Of course, but for the purpose of the ACT, that inference would be wrong.

Remember, these types of questions will be asking you to find the *best* answer, not the *right* answer. Unfortunately, it is often difficult to write in our own prediction on these types of questions. So be careful and use process of elimination.

ACT Science Mini Lesson #4-More Types of Science Questions

Easy Questions: go grab the answer…(10 to 15 questions)
1. Look at the graph/chart/table Questions

These questions are relatively straight-forward, and should be answered first. These questions simply ask you to go back to the chart, table, or experiment, and fetch what the information says and means.

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3. Interpolate Questions

These questions will require you to look within the chart or graph and find the answer based on the information given. To interpolate simply means to estimate a value on a graph that is between two known data points.
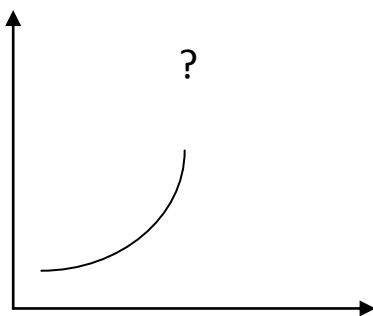
For instance...
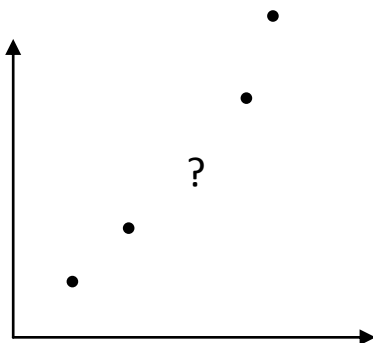
4. Extrapolate Questions

Extrapolate questions are slightly more difficult, because they will require you to use the known data to expand into an area not tested.

These questions can be asked in terms of a graph, table, or experiments, and ask you to use the given data to support a logical and inarguable conclusion.

Hard Questions-Make general conclusions (10-15 questions)
5. Compare and Contrast Questions
These are mostly seen in both the "fighting scientists" and "experiments" passages. These questions will ask you to make general conclusions, and interpret the differences between the hypotheses.

3. Interpolate Questions

These questions will require you to look within the chart or graph and find the answer based on the information given. To interpolate simply means to estimate a value on a graph that is between two known data points.

For instance...
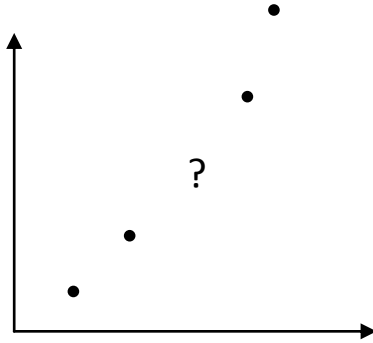
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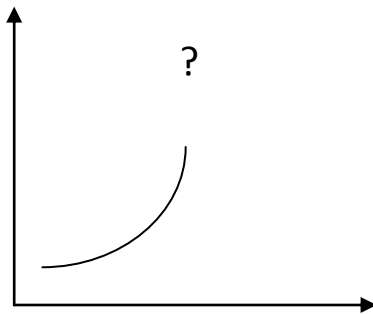
Hard Questions-Make general conclusions

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These are mostly seen in both the "fighting scientists" and "experiments" passages. These questions will ask you to make general conclusions, and interpret the differences between the hypotheses.

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Puzzle Fit of Correct Answers

If you've ever practiced ACT questions in either reading or science, you've probably noticed that the questions seem repetitive. In fact, they are. The ACT uses these passages to test your ability to identify and comprehend only a FEW key ideas. Then, **ALL** of the questions surround these few ideas.

So What?

1. _____
_____
_____

2. _____
_____
_____

3. _____
_____
_____
.
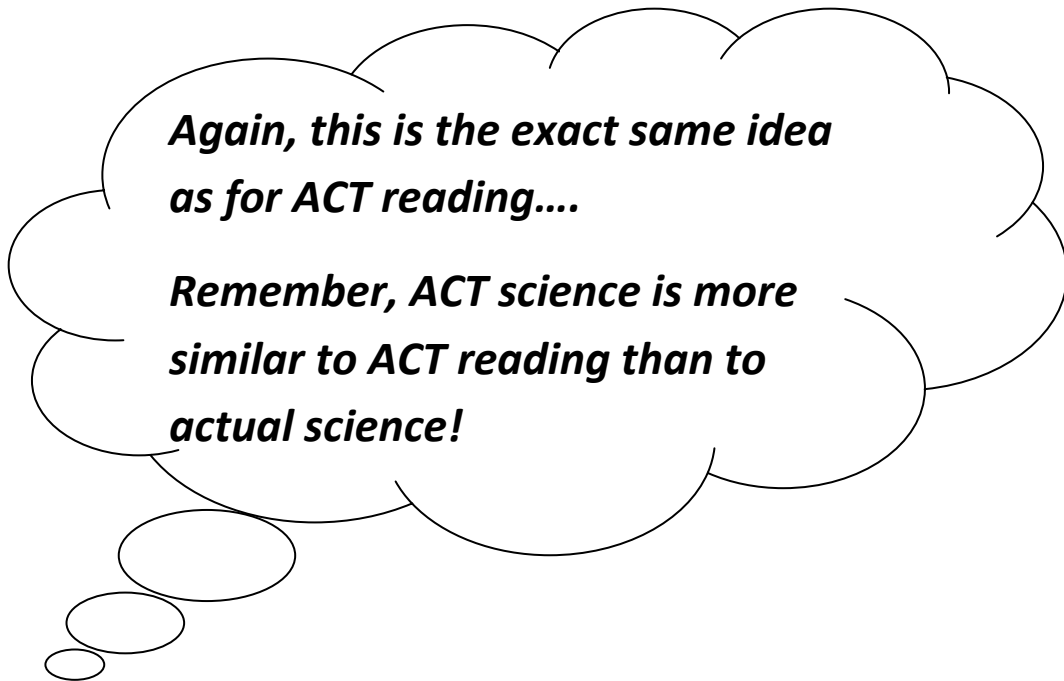
Again, this is the exact same idea as for ACT reading….

Remember, ACT science is more similar to ACT reading than to actual science!

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Puzzle Fit of Correct Answers

If you've ever practiced ACT questions in either reading or science, you've probably noticed that the questions seem repetitive. In fact, they are. The ACT uses these passages to test your ability to identify and <u>comprehend only a FEW key ideas</u>. Then, **ALL** of the questions surround these few ideas.

So What?
1. After you've finished answering all the questions, go back and look at your answers. The answer choices that you've circled should fit together - they should all agree with one another. **These correct answers should seem repetitive and fit within the main idea of the graph, hypothesis, or experiment.**

2. If they don't, go back and see which ones stand out because they don't fit in your puzzle.

3. If you can't see a pattern, you've probably misunderstood or failed to identify the key points.

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Ordering the Questions Drill

Imagine you encounter the following questions. Don't worry about answering them, since you don't have either the passage or the answer choices. Instead, refer to the chart above, and make a note next to the question from 1-4, in the order that these questions should be answered.

___ *The results of experiments 1 and 2 indicate that…*

___ *Which of the following items serves as the control in the experiment*

___ *Based on the above experiments, which of the following is the most likely conclusion…*

___ *Suppose the plant described in experiments 1-5 is cut off while in the light, and a new plant doesn't grow. What will happen to the plant?*

Ordering the Questions Drill

Imagine you encounter the following questions. Don't worry about answering them, since you don't have either the passage or the answer choices. Instead, refer to the chart above, and make a note next to the question from 1-4, in the order that these questions should be answered.

__2_ *The results of experiments 1 and 2 indicate that…*

_1_ *Which of the following items serves as the control in the experiment*

_3__ *Based on the above experiments, which of the following is the most likely conclusion…*

_4__ *Suppose the plant described in experiments 1-5 is cut off while in the light, and a new plant doesn't grow. What will happen to the plant?*

If students have a slightly different order for the questions than this one, that's okay. This is not an exact science, and the goal of this drill is for students to understand that they will benefit from answering "fast questions" at the beginning, and "slow questions" at the end.

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ACT Science Mini Lesson #5-Steps to Solving the Science Passages

Although each type of passage will require a slightly different strategy, the overall steps for maximizing time on ACT science passages are as follows.

Step 1. _____

    a. Take a look at the format and identify the type of passage
    b. Scan the graphs or charts
    c. Jot down some notes, and underline key words

Step 2. _____

    a. Look to answer fetch questions first
    b. Any questions that look like they will take a long time, save for the end

Step 3. _____

    a. Use mental math to make quick calculations or read graphs
    b. Cover-up and Predict whenever possible

Step 4. _____

    a. Eliminate incorrect answer choices
    b. Spend time going back to the passage to make sure that you make the best guess possible

ACT Science Mini Lesson #5-Steps to Solving the Science Passages

Although each type of passage will require a slightly different strategy, the overall steps for maximizing time on ACT science passages are as follows.

Student MUST identify the objective of the graph/chart/experiment. This is similar to "finding the thesis" when looking at reading passages.

Often, students will be able to answer these questions without doing computations EXACTLY. Most of these questions can be solved by using logic and common sense in combination with the main point.

Step 1. Skim the passage to understand the main points/goals/relationship between variables

a. Take a look at the format and identify the type of passage
b. Scan the graphs or charts
c. Jot down some notes, and underline key words

Step 2. Identify each Question Type

a. Look to answer fetch questions first
b. Any questions that look like they will take a long time, save for the end

Step 3. Make Educated Guesses

a. Use mental math to make quick calculations or read graphs
b. Cover-up and Predict whenever possible

Step 4. Use POE

a. Eliminate incorrect answer choices
b. Spend time going back to the passage to make sure that you make the best guess possible

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ACT Science Mini Lesson #6-Charts and Graphs Passages

Four Types of Graphs

1. _____

2. _____

3. _____

4. _____

When you see a graph, ask yourself three questions:

1. _____

2. _____

3. _____

Sometimes, the ACT will try to trick you by putting the answer choices in the wrong units (Ex: meters instead of centimeters.) Make simple conversions when needed.

Four Types of Graphs (blank for students)

1. *Linear Graphs*
2. *Graphs with Curves*
3. *Scatter Plots*
4. *Flat Lines*

When you see a graph, ask yourself three questions: (blank for students)

1. *What are the variables? (temperature, number of plants, records sold, hp, mph)*

2. *How are they measured? (grams? Quarts? Percentages?)*

3. *How are they related/changing? (+, -, NR)*

Sometimes, the ACT will try to trick you by putting the answer choices in the wrong units (Ex: meters instead of centimeters.) Make simple conversions when needed.

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Linear Graphs

Type 1: Linear (Straight) Graphs

Positive Relationship = _____ Relationship = ALWAYS PUT A _____

Negative Relationship = _____ / _____ Relationship = ALWAYS PUT A _____

Example #1

Snacking at Raby

Example # 2

TV vs Sleep at Raby
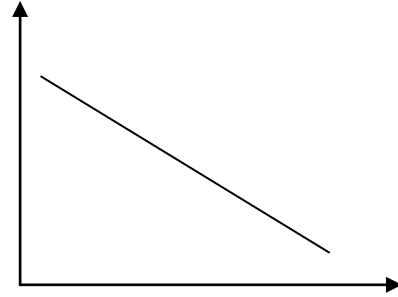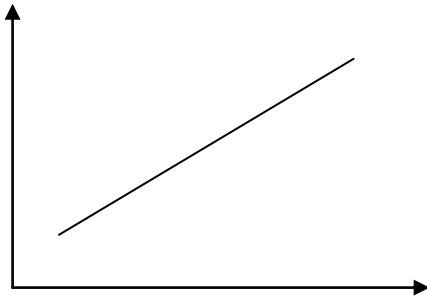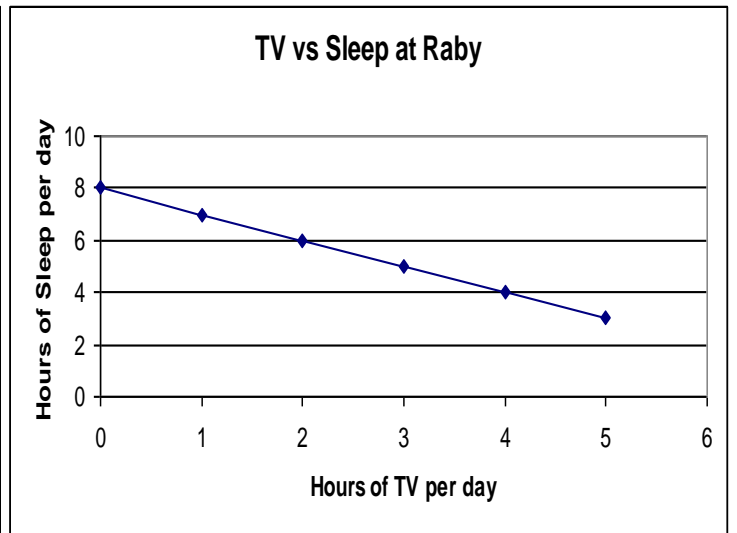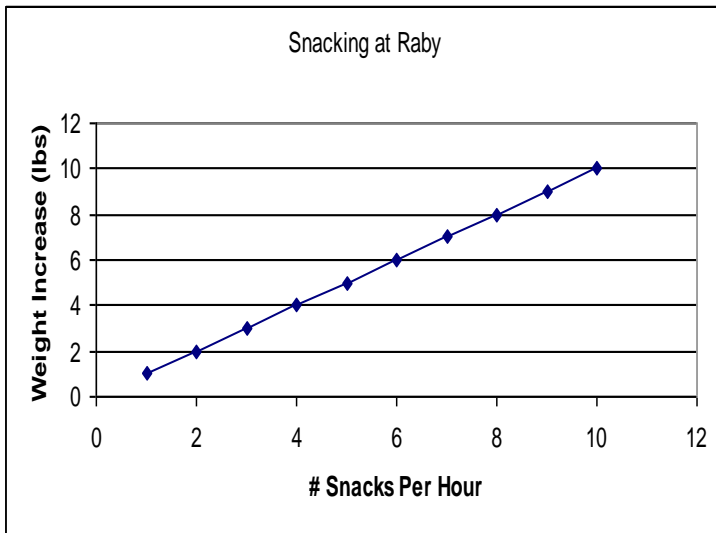
For each of the graphs above, identify the following:

	Example 1	Example 2
What are the variables?		
How are they measured?		
How are they related/changing?		

Linear Graphs

Type 1: Linear (Straight) Graphs

Positive Relationship = direct Relationship = ALWAYS PUT A (+)

Negative Relationship = inverse /indirect Relationship = ALWAYS PUT A (-)
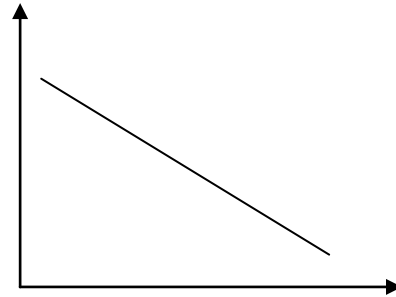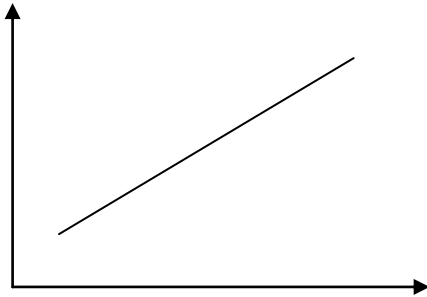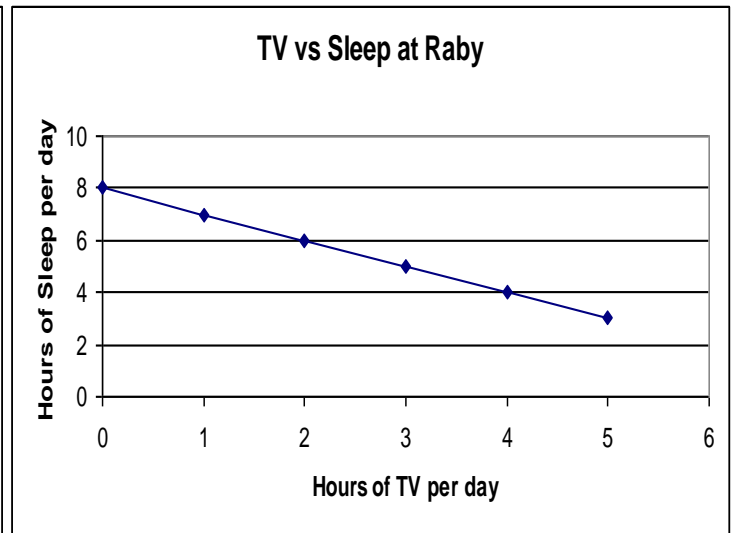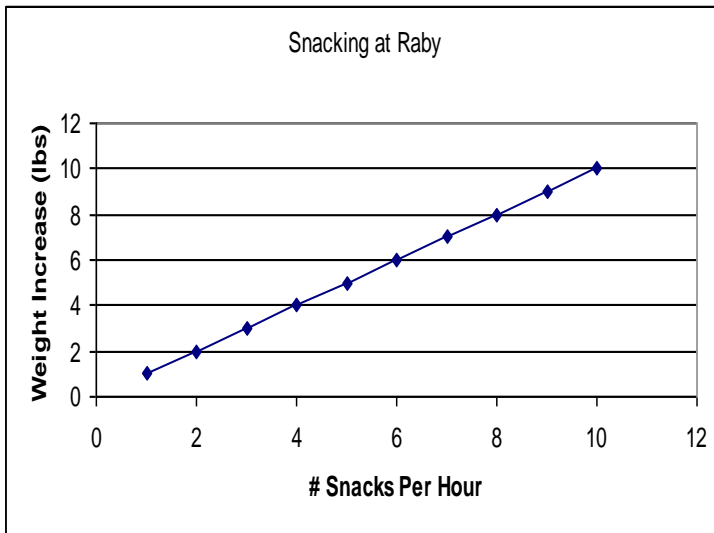
Example #1

Snacking at Raby

Example # 2

TV vs Sleep at Raby

For each of the graphs above, identify the following:

	Example 1	Example 2
What are the variables?	Weight + vs. snacks/hour	Hours of sleep vs. hour of TV/day
How are they measured?	+ in lbs, # snacks/hour	Hours, hours
How are they related/changing?	+ correlation	- correlation

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Graphs with Curves

Type 2: Curved (Nonlinear / Non-straight) Graphs

Still annotate with a + or a - Might need several +'s or –'s, or an OVERALL + & –.

Example #1

Money Saved over Time
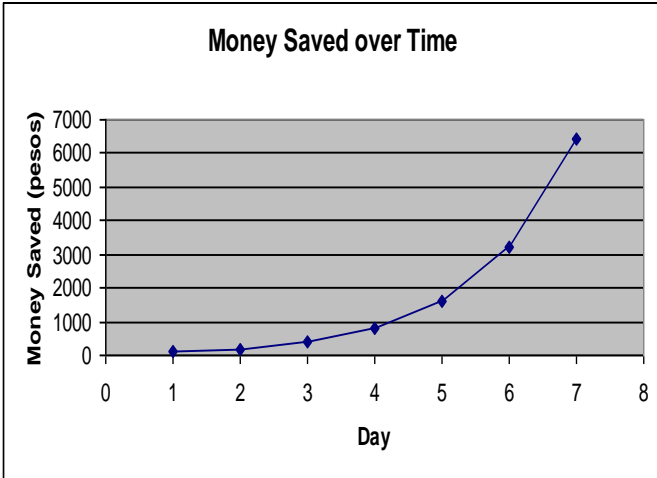
	Example #1
What are the variables?	
How are they measured?	
How are they related/changing?	

Example #2

Real Median Household Income: 1967 to 2005
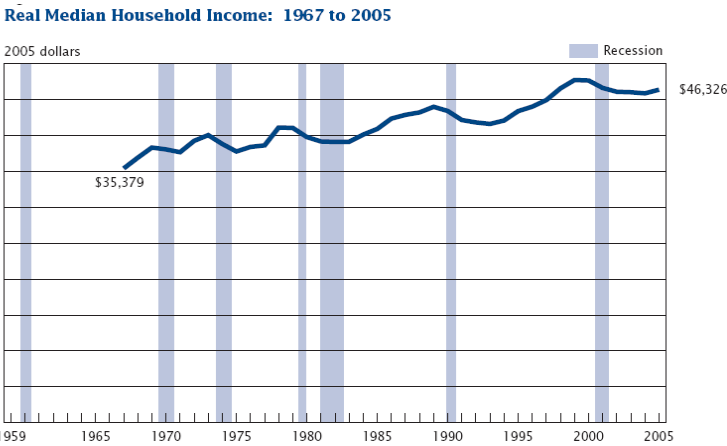
	Example #2
What are the variables?	
How are they measured?	
How are they related/changing?	

Graphs with Curves

<u>Type 2</u>: Curved (Nonlinear / Non-straight) Graphs

Still annotate with a + or a - Might need several +'s or –'s, or an OVERALL + & –.
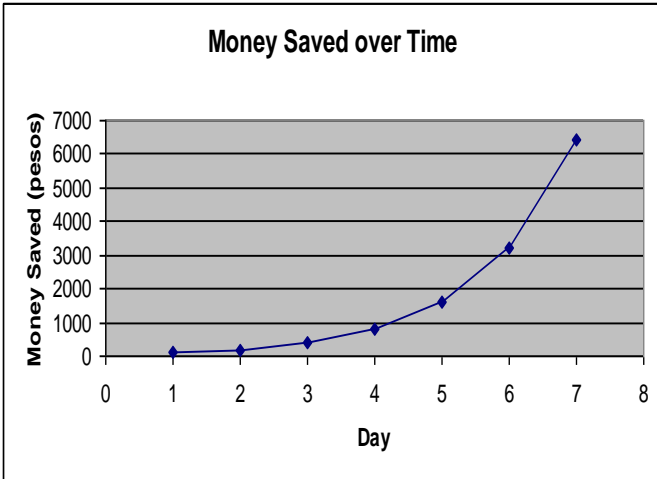
Example #1

	Example #1
What are the variables?	$ saved vs. time
How are they measured?	Pesos vs. days
How are they related/changing?	Flat, then +

Example #2
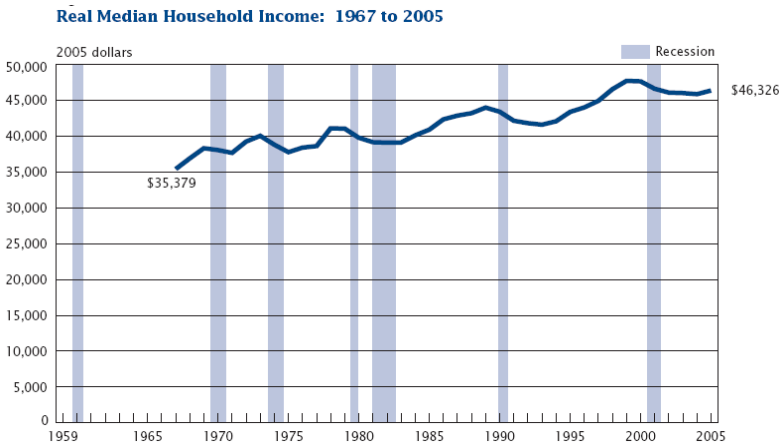
	Example #2
What are the variables?	Median Income vs. time
How are they measured?	2005 $ vs. years
How are they related/changing?	Relatively constant with ups and down, big + from 1995-2000

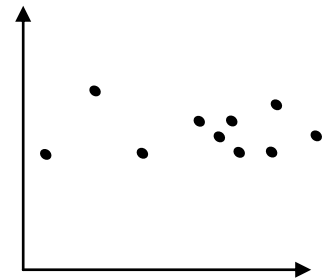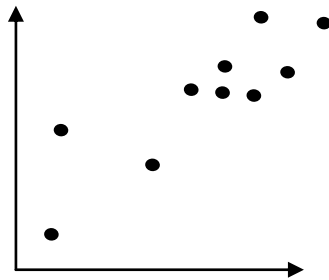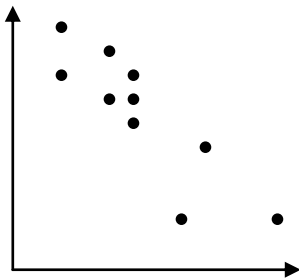**Student Page 150 / Science Slides 26**

Scatter Graphs

Steps to solving Scatter Plots

1. Still annotate with a   +/-/NR   .
2. Draw in the *LINE OF BEST FIT*
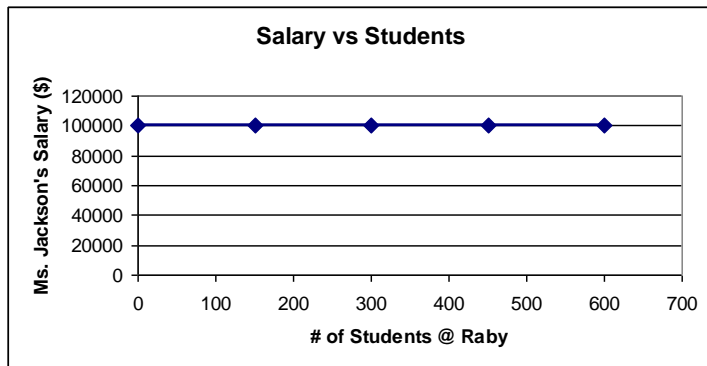
Drill:

Draw a line of best fit for the following scatter graphs

Flat Graphs

These graphs will not have a +/- relationship, but that does NOT mean that these variables are not related.

Example

Salary vs Students

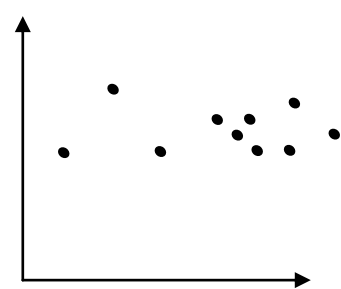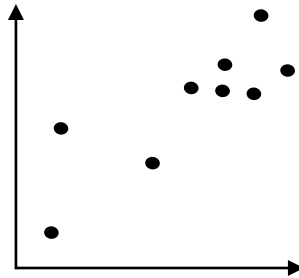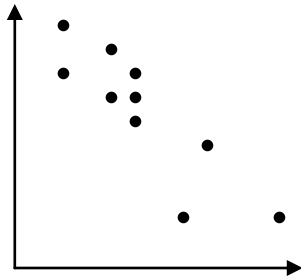|	Example
What are the variables?	
How are they measured?	
How are they related/changing?	

Scatter Graphs (Science Slides 27-28)

Steps to solving Scatter Plots

1. Still annotate with a   +/-/NR   .
2. Draw in the *LINE OF BEST FIT*

<u>Drill:</u>

Draw a line of best fit for the following scatter graphs

Flat Graphs

These graphs will not have a +/- relationship, but that does NOT mean that these variables are not related.
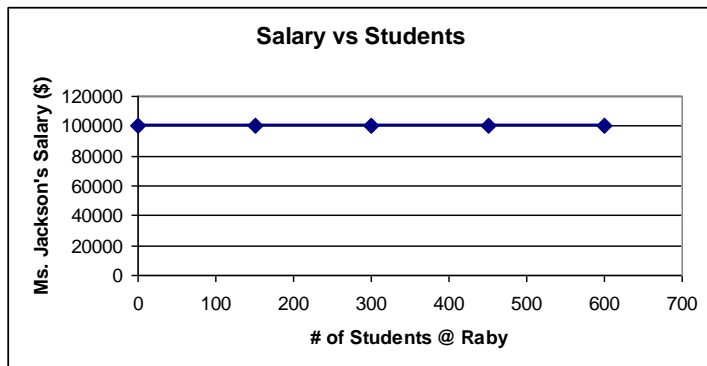
Example

	<u>Example</u>
What are the variables?	# of students at the school vs. Ms Jackson's salary
How are they measured?	# students at the school vs. $
How are they related/changing?	Flat, she makes the same amount regardless of # students

Tables

You should have the same thought process for tables as you have for graphs.

Houses Sold in US over Time

Year	# Units (in 1000s)
1970	485
1975	549
1980	545
1985	688
1990	534
1995	667
2000	877
2005	1,283

Source: US Census Bureau, 2006

Lifting Strength vs. Muscle Diameter

Lifting Strength (N)	Muscle Diameter (cm)
50	24
43	20
40	19
20	15
12	12
5	6
2	4
1	3

Human CO_2 Output vs. Forest Size

CO_2 Output (kg)	Forest Size (ha)
10	2013
20	2010
30	2111
40	1983
50	1323
60	2100
70	2000
80	2001

	Example 1	Example 2	Example 3
What are the variables?			
How are they measured?			
How are they related/changing?			

Translating a Graph from a Table

Chymotrypsin Acidity:
Temperature Dependence

Temp (°C)	pH Level
47	2
42	5
37	7
32	4
27	3

Don't Forget:

- Title
- Labels for variables
- Scale

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Tables

You should have the same thought process for tables as you have for graphs.

Houses Sold in US over Time

Year	# Units (in 1000s)
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1975	549
1980	545
1985	688
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Source: US Census Bureau, 2006

Lifting Strength vs. Muscle Diameter

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43	20
40	19
20	15
12	12
5	6
2	4
1	3

Human CO_2 Output vs. Forest Size

CO_2 Output (kg)	Forest Size (ha)
10	2013
20	2010
30	2111
40	1983
50	1323
60	2100
70	2000
80	2001

	Example 1	Example 2	Example 3
What are the variables?	Years vs. houses sold	Lifting strength vs. muscle diameter	humanCO2 output vs. forest size
How are they measured?	Years, houses (thousands)	(N) vs. diameter (cm)	Human Co2 (kg) vs. size (ha)
How are they related/changing?	Relatively flat until 1995, then huge increase	The bigger the muscle diameter, the greater the strength	No obvious linear relationship

Translating a Graph from a Table

Chymotrypsin Acidity:
Temperature Dependence

Temp (°C)	pH Level
47	2
42	5
37	7
32	4
27	3
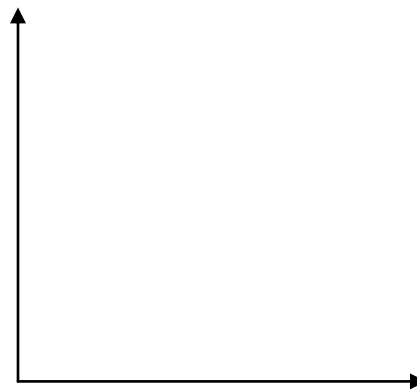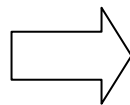
Student Page 152 / Slides 29

Don't Forget:

- Title
- Labels for variables
- Scale

320

ACT Science Mini Lesson #7-Experiments

Do not read the experiments in detail. Make some notes about what is changing from one experiment to another, and be sure to underline or circle key words or phrases.   When you are scanning, simply look for differences in the experiments and charts. Then go straight to the questions.

Steps to Solving Experiments Passages

Step 1._____

Step 2._____

Step 3._____

Step 4._____

Step 5._____

Step 6._____

Remember, if you see two answer choices that are exact opposites, one of them is likely the correct answer.

ACT Science Mini Lesson #7-Experiments

Do not read the experiments in detail. . Make some notes about what is changing from one experiment to another, and be sure to underline or circle key words or phrases. When you are scanning, simply look for differences in the experiments and charts. Then go straight to the questions.

Steps to Solving Experiments Passages
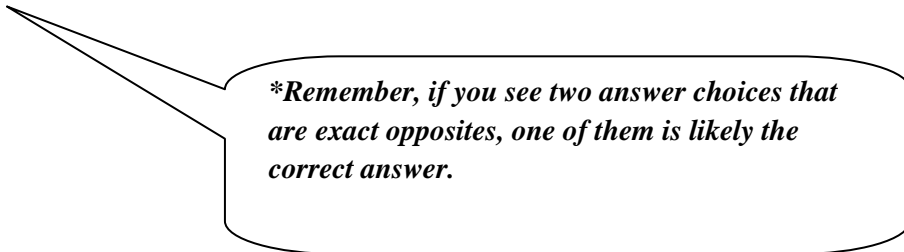
Step 1. Scan the passage
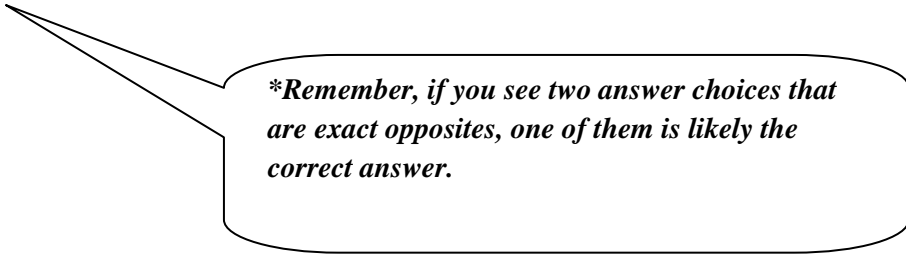
Step 2. Identify the objective of the experiment(s)

Step 3. Identify how the research is being done

Step 4.Identify the results of each experiment

Step 5. Answer the questions in "easy to hard" order

Step 6. Use POE

*Remember, if you see two answer choices that are exact opposites, one of them is likely the correct answer.

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Independent and Dependent Variables

Every experiment has two variables – or things that will change.

(input) Independent Variable: _____

(output) Dependent Variable: _____

Ex: Which brand of toothpaste cleans teeth the best?

Dependent variable: how clean the teeth are

Independent variable: brand of toothpaste

Independent vs. Dependent Variable Practice Drill

Identify the dependent and independent variables:

1. How does the number of vegetables children eat affect how tall they grow?

Dependent variable: _____

Independent variable: _____

2. Sam grew 3 artichokes in 3 different brands of soil. After 2 weeks, he measured their heights and determined which one grew the tallest.

Dependent variable: _____

Independent variable: _____

3. Connie swabbed 3 different places in her dorm room for bacteria – the doorknob, the tops of her desk, and her textbooks. She let the bacteria grow in dishes for 2 weeks and then she measured how big the bacteria grew.

Dependent variable: _____

Independent variable: _____

4. Summer put 1 Mentos each into 3 different brands of soda and measured how high the soda shot up.

Dependent variable: _____

Independent variable: _____

Independent and Dependent Variables (Science Slides 32)

Every experiment has two variables – or things that will change.

Independent Variable: The variable that you are investigating. The thing that causes the DV to have different measurements.

Dependent Variable: The variable you are going to measure in your experiment

Which brand of toothpaste cleans teeth the best?

Dependent variable: how clean the teeth are

Independent variable: brand of toothpaste

Independent vs. Dependent Variable Practice Drill

Identify the dependent and independent variables:

1. How does the number of vegetables children eat affect how tall they grow?

Dependent variable: *children's heights*

Independent variable: *number of vegetables eaten*

2. Sam grew 3 artichokes in 3 different brands of soil. After 2 weeks, he measured their heights and determined which one grew the tallest.

Dependent variable: *heights of the artichokes*

Independent variable: *type of soil*

3. Connie swabbed 3 different places in her dorm room for bacteria – the doorknob, the top of her desk, and her textbooks. She let the bacteria grow in dishes for 2 weeks and then she measured how big the bacteria grew.

Dependent variable: *size of bacteria*

Independent variable: *Places where bacteria was collected (desk, doorknob, books)*

4. Summer put 1 Mentos each into 3 different brands of soda and measured how high the soda shot up.

Dependent variable: *height of soda shot*

Independent variable: *type of soda*

Experiments Example 1:

An investigator was interested in observing whether a chemical reaction occurs when compounds are mixed with water. Chemical reactions are known to produce heat. Three compounds were observed in order to determine whether, based on the release of heat, a reaction took place. A thermometer was placed in each test tube to record any change in temperature.

Test Tubes	Δ Heat Yes	Δ Heat No
1. Powdered bleach + H_2O	X	
2. Salt + H_2O		X
3. Sugar + H_2O		X

1. What is the objective of the experiment?

2. How is the research being conducted?

3. What were the results?

Experiments Example 1:

An investigator was interested in observing whether a chemical reaction occurs when compounds are mixed with water. Chemical reactions are known to produce heat. Three compounds were observed in order to determine whether, based on the release of heat, a reaction took place. A thermometer was placed in each test tube to record any change in temperature.

Test Tubes	Δ Heat	
	Yes	No
1. Powdered bleach + H_2O	X	
2. Salt + H_2O		X
3. Sugar + H_2O		X

1. What is the objective of the experiment?

To test whether chemical reactions occur when various compounds are mixed with water

2. How is the research being conducted?

A thermometer was place in the three test tubes to test whether or not a change in temperature occurred.

3. What were the results?

Bleach reacted with water, salt and sugar did not

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Experiments Example #2

Example 2:

A laboratory experiment was conducted to determine whether the lack of sunlight influences photosynthesis (production of glucose). Eight potted *Salvia* flowers were randomly selected and divided into two groups and labeled Group A and Group B. The plants were then subjected to differing light conditions and examined one week later.

Group A

These plants were exposed to sunlight for the duration of the study. At the end of the study, these plants were green in appearance and produced glucose.

Group B

These plants were kept in the dark. At the end of the study they were yellow in appearance and did not produce glucose.

Questions

1. What is the objective of the experiment?

2. How is the research being conducted?

3. What were the results of each test?

Experiments Example #2

Example 2:

A laboratory experiment was conducted to determine whether the lack of sunlight influences photosynthesis (production of glucose). Eight potted *Salvia* flowers were randomly selected and divided into two groups and labeled Group A and Group B. The plants were then subjected to differing light conditions and examined one week later.

Group A

These plants were exposed to sunlight for the duration of the study. At the end of the study, these plants were green in appearance and produced glucose.

Group B

These plants were kept in the dark. At the end of the study they were yellow in appearance and did not produce glucose.

Questions:

1. What is the objective of the experiment?

The goal of the experiment was to determine if a lack of sunlight influences photosynthesis

2. How is the research being conducted?

Two groups of four plants each were subjected to differing light conditions and examined one week later.

3. What were the results of each test?

When plants were subjected to sunlight, they appeared healthy and green. When plants were kept in darkness, they appeared yellow and did not produce glucose.

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ACT Science Mini Lesson #8-Experiments Practice

Four test landfill sites were prepared to determine the effect of industrial wastes on water absorption, alkalinity, and metal concentrations. All four sites contained the same amount and type of municipal waste and were located within a mile of one another. Site 1 was used as a control and no additional material was added. Sewage sludge was added to Site 2, battery production waste was added to Site 3, and inorganic pigment waste was added to Site 4.Over the course of a year, measurements were taken to determine what percent of the maximum water capacity the site had maintained. Scientists measured each site's alkalinity, and its concentration of copper and nickel.

Table 1 Concentrations in mg per kg

	Alkalinity	*Nickel*	*Copper*
Site 1	2080	182	17
Site 2	5820	236	36
Site 3	3008	287	53
Site 4	4420	938	134

Figure 1

Student Page 157

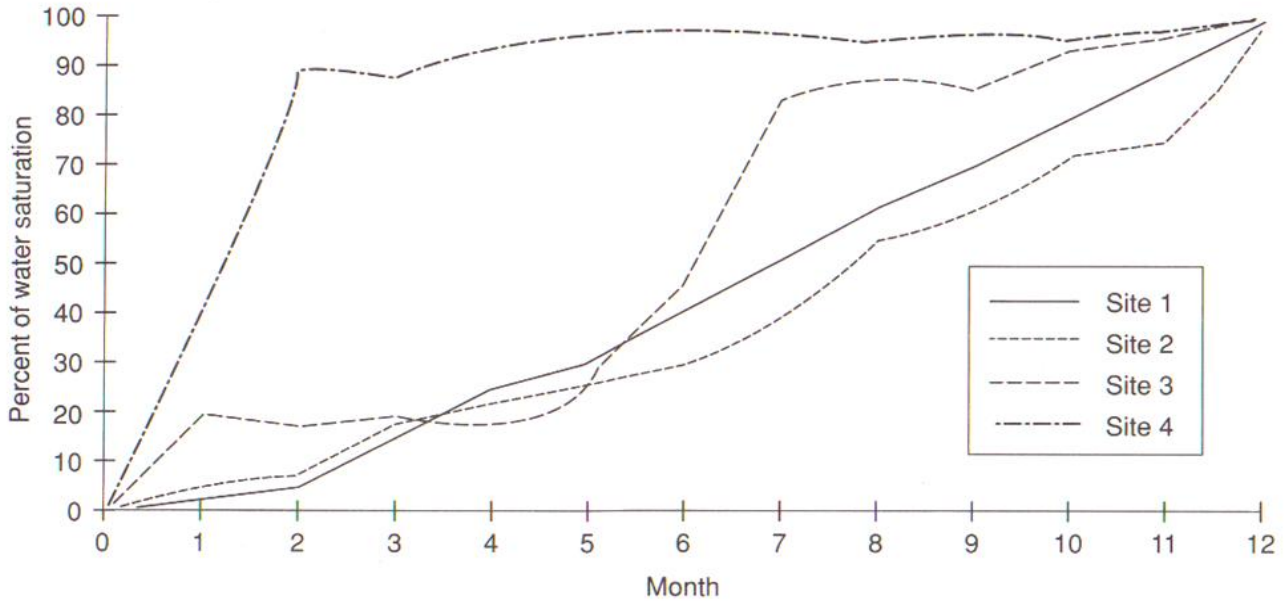**Questions 1-6 are based on the above passage…**

1. According to the study, the best model for studying the effects of increased copper concentration in landfills would be a site that:

A. only contains municipal waste.
B. receives wastes from an inorganic pigment factory.
C. receives wastes from a battery factory.
D. is very alkaline.

2. Which of the following best describes the pattern of water saturation seen in Figure 1?

F. Site 1 was saturated with water more quickly than the other sites.
G. Site 4 was saturated with water more quickly than the other sites.
H. Site 3 was saturated with water at about the same rate as Site 2.
J. Site 2 was saturated with water at about the same rate as Site 4.

3. What conclusion can be drawn from the results in Figure 1?

A. More rain fell on Sites 3 and 4 than on Sites 1 and 2.
B. The municipal waste was more porous in Site 3 than in the other sites.
C. Adding battery waste decreases the amount of time for saturation to occur.
D. Site 3 absorbed water at about the same rate for all twelve months.

4. On the basis of these experimental results, which of the following is least likely to delay the saturation of a landfill site?

F. Increasing the amount of copper
G. Adding sewage sludge
H. Increasing alkalinity
J. Adding inorganic pigment

5. Suppose that scientists created a fifth test site and added about half the amount of battery production waste that was added to Site 3. When compared to Site 1, saturation in the new site will probably occur:

A. more quickly, because adding battery waste speeds up saturation.
B. more slowly, because adding battery waste increases the concentration of nickel.
C. more quickly, because adding battery waste greatly increases alkalinity.
U. more slowly, because adding battery waste slows down saturation.

6. The alkalinity of a site was most affected by:

F. municipal refuse.
G. sewage sludge.
H. battery production waste.
   J. inorganic pigment waste   **Student Page 158**

ACT Math Mini Lesson #9-More Experiments Practice

A student conducted experiments to determine the coefficients of friction between blocks of different types of wood and a lacquered tabletop. The student determined both the static and kinetic coefficients of friction for the various wood-table pairs. Static friction is the friction inherent in stationary objects, while kinetic friction is the friction inherent in moving objects. Coefficients of friction depend only on the two materials involved: the object and the surface.

Experiment 1

The student placed a block of wood flat on the table 50 centimeters from the edge. Attached to the wood was a cord that went through a pulley mounted on the end of the table. Hanging off the table at the end of the cord was a platform. The student carefully placed weights on the platform until the block of wood began to move. The mass, m, which caused the block to begin moving, is known as the threshold mass. The results are shown in Table 1.

A student conducted experiments to determine the coefficients of friction between blocks of different types of wood and a lacquered tabletop. The student determined both the static and kinetic coefficients of friction for the various wood-table pairs. Static friction is the friction inherent in stationary objects, while kinetic friction is the friction inherent in moving objects. Coefficients of friction depend only on the two materials involved: the object and the surface.

Trial	Wood	Mass (kg)	Threshold Mass (g)	Coefficient of Friction
1	Fir	1	396	0.396
2	Fir	2	808	0.404
3	Fir	4	1608	0.402
4	Oak	2	1246	0.623
5	Oak	3	1863	0.621
6	Oak	5	3090	0.618

Experiment 2

The student used the exact same setup as in Experiment I and the information gathered from that experiment. The student placed weights greater than the threshold mass on the platform and measured how quickly the blocks were dragged over the side. The time was measured so that acceleration and the coefficient of friction could be calculated. The results are shown in Table 2.

Trial	Wood	Mass (kg)	Hanging Mass m (g)	Time (s)	a (m/s^2)	Coefficient of Friction
7	Fir	1	500	0.783	1.63	0.337
8	Fir	2	1000	0.788	1.61	0.339
9	Oak	2	1500	0.604	2.74	0.476
10	Oak	3	2000	0.733	1.86	0.481

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Questions 1-6 are based on the above passage…

1. If a new block of oak with mass 4 kilograms were tested, the threshold mass would be closest to:
A. 1635 grams
B. 2420 grams
C. 3090 grams
D. 3740 grams

2. Based on the information in both experiments, which of the following statements about coefficients of friction is correct?
F. Increasing the mass of the block always increases the coefficient of friction.
G. Increasing the mass of the block always decreases the coefficient of friction.
H. Increasing the mass of the block can increase the coefficient friction for some materials.
J. There is no relationship between the mass a block and the coefficient of friction.

3. Which of the following would have the highest coefficient of friction?
A. Stationary fir
B. Moving fir
C. Stationary oak
D. Moving oak

4. If the student repeated the experiments on an inclined plane made of the same substance as the table, what quantity would not change?
F. Coefficient of friction
G. Acceleration
H. Threshold mass
J. Time

5. The purpose of each experiment was to measure the coefficient of friction. Which one measured static, and which one measured kinetic?
A. 1st: kinetic; 2nd: static
B. Both measured kinetic
C. 1st: static; 2nd: kinetic
D. Both measured static

6. If the student repeated Trial 7 with a heavier mass, how would the results differ?
F. Acceleration: increase, time: decrease, coefficient of friction: constant
G. Acceleration: constant, time: constant, coefficient of friction: constant
H. Acceleration: decrease, time: increase, coefficient of friction: increase
J. Acceleration: decrease, time: increase, coefficient of friction: decrease

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ACT Science Mini Lesson #10-Conflicting Scientists

At least two views about a scientific theory will be presented, followed by 7 questions. Go over each theory briefly to understand the puzzle-fit of the arguments before answering the questions.

Step 1. _____

Step 2. _____

Step 3. _____

Remember to answer specific questions first and general questions last, just like you would if there was only one passage

Step 4. _____

Step 5. _____

Remember to answer specific questions first and general questions last, just like you would if there was only one passage

ACT Science Mini Lesson #10-Conflicting Scientists

At least two views about a scientific theory will be presented, followed by 7 questions. Go over each theory briefly to understand the puzzle-fit of the arguments before answering the questions.

Step 1. Read hypothesis 1-determine argument.

Step 2. Answer all questions that ask about hypothesis 1 only

Step 3. Read hypothesis 2-determine argument.

Step 4. Answer all questions that ask about hypothesis 2 only

Step 5. Answer questions that ask about the "puzzle fit" of the two hypotheses

Remember, the hypotheses will not be exact opposites of one another.   Look to see how the arguments agree and disagree.

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ACT Science Mini Lesson #11-Conflicting Scientists Practice

A greenish, potato-sized meteorite discovered in Antarctica is believed to have originated on Mars. Investigations of the meteorite have revealed a number of unusual features. Some scientists believe that these features are evidence of primitive life on Mars, while other scientists believe that they are more probably the result of nonbiological (nonliving) processes, such as hydrothermal synthesis.

Hydrothermal Synthesis Hypothesis

This hypothesis states that the meteorite crystallized slowly from magma (molten rock) on Mars 4.5 million years ago. About half a million years later, the rock became fractured. This was a time when Mars was much warmer and had abundant water. Deep inside the planet, in a process called hydrothermal synthesis, hot water and carbon seeped into the fractured rock and formed new complex organic compounds called polycyclic aromatic hydrocarbons (PAHs). (Organic compounds, or those that contain carbon, are formed from life processes, such as bacterial decay, as well as processes that are not associated with life, including hydrothermal synthesis and star formation.)

As the chemical environment of the planet changed over time, crystals of magnetite, iron sulfides, and carbonate formed in the rock. The crystallization of the carbonate resulted in the formation of unusual elongated and egg-shaped structures within the crystals.

Main Argument of Hypothesis #1

_____
_____

Primitive Life Hypothesis

Proponents of this theory argue that the meteorite crystallized slowly from magma (molten rock) on Mars 4.5 million years ago. About half a million years later, the rock became fractured. At this time abundant water and a warm climate created the right conditions for life. The rock was immersed in water rich in carbon dioxide, which allowed carbon to collect inside the fractured rock, along with primitive bacteria. The bacteria began to manufacture magnetite and iron sulfide crystals, just as bacteria on Earth do. As generations of bacteria died and decayed, they created PAHs inside of the meteorite's carbon molecules. Finally, some of bacteria themselves were preserved as elongated egg-shaped fossils inside the rock.

Main Argument of Hypothesis #2

_____
_____

ACT Science Mini Lesson #11-Conflicting Scientists Practice

A greenish, potato-sized meteorite discovered in Antarctica is believed to have originated on Mars. Investigations of the meteorite have revealed a number of unusual features. Some scientists believe that these features are evidence of primitive life on Mars, while other scientists believe that they are more probably the result of nonbiological (nonliving) processes, such as hydrothermal synthesis.

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As the chemical environment of the planet changed over time, crystals of magnetite, iron sulfides, and carbonate formed in the rock. The crystallization of the carbonate resulted in the formation of unusual elongated and egg-shaped structures within the crystals.

Main Argument of Hypothesis #1

Hot water and carbon seeped into the fractured rock and formed new organic compounds called (PAHs).

Primitive Life Hypothesis

Proponents of this theory argue that the meteorite crystallized slowly from magma (molten rock) on Mars 4.5 million years ago. About half a million years later, the rock became fractured. At this time abundant water and a warm climate created the right conditions for life. The rock was immersed in water rich in carbon dioxide, which allowed carbon to collect inside the fractured rock, along with primitive bacteria. The bacteria began to manufacture magnetite and iron sulfide crystals, just as bacteria on Earth do. As generations of bacteria died and decayed, they created PAHs inside of the meteorite's carbon molecules. Finally, some of bacteria themselves were preserved as elongated egg-shaped fossils inside the rock.

Main Argument of Hypothesis #2

The rock was immersed in water rich in carbon dioxide, which allowed carbon to collect inside the fractured rock. As generations of bacteria died and decayed, they created PAHs inside of the meteorite's carbon molecules.

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Key Points From the Passages

What is the issue being argued about?

_____
_____

Main Point of Agreement

_____
_____

Main Point of Disagreement

_____
_____

Key Points From the Passages

What is the issue being argued about?

The issue being argued about is whether the features of the meteorite are evidence of primitive life on Mars, or if they are more probably the result of nonbiological (nonliving) processes, such as hydrothermal synthesis.

Main Point of Agreement

The meteorite crystallized slowly from magma (molten rock) on Mars 4.5 million years ago. About half a million years later, the rock became fractured.

Main Point of Disagreement

Hydrothermal synthesis vs. primitive life

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ACT Science Section Summary

Science Section Notes:

What should I look for when analyzing charts and graphs?

_____
_____

What should I look for when analyzing experiments passages?

_____
_____

How should I tackle conflicting scientists?

_____
_____

How do I maximize time on ACT science?

_____
_____

In what order should I answer ACT science questions?

_____
_____

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Science Section Notes:

What should I look for when analyzing charts and graphs?

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What should I look for when analyzing experiments passages?

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How should I tackle conflicting scientists?

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_____

How do I maximize time on ACT science?

_____
_____

In what order should I answer ACT science questions?

_____
_____

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Further Practice (Teachers Edition Only)

The following chart outlines the segmentations of the science sections for the ACT released tests.

Strategy/Question Type	ACT Practice Test #1	ACT Practice Test #2	ACT Practice Test #3
Charts and Graphs	Section 4 #'s 1-5, 6-10,17-21	Section 4 #'s 8-13, 20-24, 25-29, 36-40	Section 4 #'s 1-5, 25-29, 36-40
Experiments	Section 4 #'s 11-16,22-27, 28-33	Section 4 #'s 1-7, 14-19,30-35	Section 4 #'s 13-18, 19-24, 30-35
Conflicting Scientists	Section 4 #'s 34-40		Section 4 #'s 6-12

The "Optional" ACT Writing Section

The ACT Essay (Teacher's Edition Only)

What will students be asked to write about in the essay?

The essay question asks students to take a position on an issue and support it persuasively with examples from studies and experience. It is an open-ended question, so student can answer it successfully in many different ways.

How is the ACT essay different from other essays?

Unfortunately, most teachers attempt to help students write better ACT essays using the same metrics and strategies that they would use on a traditional English class assignment. The fact is, everything about the ACT essay is different from English class. Therefore the goal when helping students on the ACT essay should not be to "make them better writers, but instead to make them better at writing the type of essay that ACT graders like!

How is the ACT essay graded?

The ACT essay will be graded by two graders, who each award a score between one and six. The only way that students can receive a score of zero is to completely ignore the prompt.

Is there a rubric?

No. Unlike many typical grading systems, the ACT essay is graded on a "holistic" scale. This means that the graders simply "read" each essay, and then come up with a number practically out of thin air.

How long do ACT graders spend on a student's essay?

SAT graders are told to spend approximately 150 seconds reading each student's ACT essay. This means that they are not reading and analyzing each student's essay in detail. In fact, these graders are really skimming, looking for a few key aspects to differentiate students from one another.

What format should the students use?

Although it is possible to receive high scores for many formats, the best and easiest format for students to use is the intro, con paragraph, pro body paragraph #1, pro body paragraph #2, and finally conclusion. This allows for plenty of time to explain and analyze two examples in detail.

What is a "good" score on the ACT essay?

We tell all students that they should strive for a ten out of twelve on the ACT essay. A score of ten means that a student followed the "formula," organized the essay appropriately, used examples, and included analysis that is relevant to their thesis statements. Students can receive perfect scores of 800 in the writing section by simply receiving a 10 on the essay and answering all grammar questions correctly.

Will colleges see these essays?

Admission officers at any college to which students sends official ACT scores will be able to view and print the essay. That being said, colleges do not typically read these essays. They prefer to evaluate students' writing skills based on the specific admissions essays.

Teacher Edition Only

ACT Writing Mini Lesson #1-Essay Introduction

You will have 30 minutes to plan and write an essay on a topic that will be given to you. Your essay will be graded on a scale of 1-6 by two graders. Each will spend only a few minutes on your essay, so be sure to concentrate only on the "big things." The ACT essay is graded <u>holistically</u>, meaning that you will not receive points for specific paragraphs. The grader will simply scan the essay and come up with a score.

The ACT essay will test your ability to do the following Five Ideas:

1.
_____

      a. You must have a clear thesis statement
      b. Do not straddle the fence of the issue

2.
_____

      a. Be sure that every sentence and paragraph relates to your thesis
      b. Do not digress or counter your thesis at any point

3.
_____

      a. Use examples and evidence
      b. Acknowledge the counter argument

4.
_____

      a. Intro, Body, Conclusion

5.
_____

      b. Sound as smart as possible
      c. The more formal your language you use, the more it looks like you care

The ACT Essay (Writing Slides 2-3)

ACT Writing Mini Lesson #1-Essay Introduction

You will have 30 minutes to plan and write an essay on a topic that will be given to you. Your essay will be graded on a scale of 1-6 by two graders. Each will spend only a few minutes on your essay, so be sure to concentrate only on the "big things." Like the ACT essay, the ACT essay is graded <u>holistically</u>, meaning that you will not receive points for specific paragraphs. The grader will simply scan the essay and come up with a score.

The ACT essay will test your ability to do the following things:

Take a Stand

You must have a clear thesis statement

Do not straddle the fence of the issue

Maintain Focus

Be sure that every sentence and paragraph relates to your thesis
Do not digress or counter your thesis at any point

Support your Thesis

Use examples and evidence
Acknowledge the counter argument

Organize your Ideas

Intro, Body, Conclusion

Use Clear and effective Language

Sound as smart as possible
The more formal your language you use, the more it looks like you care

How the Essay is Graded:

The ACT essay is graded "holistically" meaning that there is no rubric for the graders to follow. ACT graders do not give you points for your thesis, your examples, or your conclusion. Instead, they simply read your essay and pull a number out of thin air.

The essay is graded by two graders on a scale between 1 and 6. These two scores are added together and combine to a scaled score from 2-12.

What this means for you:

Because the ACT graders will only be spending about 150 seconds grading your essay, you don't need to focus on being perfect. Instead of worrying about every little thing, you just need to worry about the BIG THINGS that will make your essay seem great.

The Big Five Part I:

- _____
- _____
- _____
- _____
- _____

The Big Five Part II:

- _____
- _____
- _____
- _____
- _____

Address the Prompt:

This simply means answer the question that they ask you! The only to way to get a score of zero on the ACT Essay is to not answer the question.

How the Essay is Graded:

The ACT essay is graded "holistically" meaning that there is no rubric for the graders to follow. ACT graders do not give you points for your thesis, your examples, or your conclusion. Instead, they simply read your essay and pull a number out of thin air.

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What this means for you:

Because the ACT graders will only be spending about 150 seconds grading your essay, you don't need to focus on being perfect. Instead of worrying about every little thing, you just need to worry about the BIG THINGS that will make your essay seem great.

> *Students need to convince ACT graders of only two things…*
>
> *1. I AM REALLY SMART*
>
> *2. I'M TRYING MY BES TO WRITE A GREAT ESSAY BECAUSE THE ACT IS REALLY IMPORTANT TO ME*
>
> *Sadly, writing a lot is the #1 way to impress ACT graders.*
>
> *Of course, a long essay does not actually equate to good writing!*

The Big Five Part I (Blank for students):

- *Fill the space*
- *Indent each paragraph*
- *Write legibly*
- *Don't use slang*
- *Use correct capitalization and punctuation*

The Big Five Part II (Blank for students):

- *Address the prompt*
- *organize your essay*
- *Examples*
- *Use correct grammar and spelling*
- *Vocabulary*

Address the Prompt:
This simply means answer the question that they ask you! The only to way to get a score of zero on the ACT Essay is to not answer the question.

Student Page 167 / Writing Slides 4-5

There is a single **BEST** way to organize your ACT Essay.

- o Introduction
- o "Con" Paragraph
- o "Pro" Paragraph #1
- o "Pro" Paragraph #2
- o Conclusion

Why did we make this page so big?
No, we did not do this by accident. If you learn nothing else but to follow this structure, you'll already have avoided some of the key ACT essay errors!

If you structure your essay in this way, the graders will think that you are well organized and that you have taken care in planning your thoughts. We will talk about each of these paragraphs in detail later, but all your essays should be structured in this fashion.

There is a single **BEST** way to organize your ACT Essay.

o Introduction
o "Con" Paragraph
o "Pro" Paragraph #1
o "Pro" Paragraph #2
o Conclusion

Although students CAN score well on the ACT essay without following this format, this five-paragraph format puts students in the best possible position to succeed.

None of these paragraphs need to be particularly long or in-depth. For the purposes of the ACT essay, CLARITY is much MORE IMPORTANT than complexity.

Each body paragraph should have ONE example only!

Remind students that this is not the best structure for any essay, it's simply the best one for THIS specific essay.

Why did we make this page so big?
No, we did not do this by accident. If you learn nothing else but to follow this structure, you'll already have avoided some of the key ACT essay errors!

If you structure your essay in this way, the graders will think that you are well organized and that you have taken care in planning your thoughts. We will talk about each of these paragraphs in detail later, but all your essays should be structured in this fashion.

The introduction to your essay should be simple and "hook" the reader into your topic. Because your essay is graded holistically, a strong first impression is very important.

The introduction should contain three simple parts
1. **Interest Creating Device** (hook) - this will draw the reader into your topic
2. **Preview of Coming Attractions**
3. **Thesis**

The three types of hooks:
1. The Rhetorical Question
2. The Anecdote
3. The Quote

Which of these three works best on the ACT Essay?

The Fake Quote:
An easy way to add depth to your examples and make your details more vivid is to employ the fake quote. The fake quote simply means to make some analytic or clichéd statement and attribute it to whomever you see fit. The fake quote can be used as a great hook and you can attribute it to your dad, your mom, or someone famous.
The fake quote can also be added to your body paragraph as either from the protagonist of the book that you are referencing or from the historical figure that you are using.

The fake quote can also be added to your body paragraph as either from the protagonist of the book that you are referencing or from the historical figure that you are using.

Practice with the Fake Quote:
Example question: "Should American high schools be more tolerant of cheating?"

Your Job: Come up with a fake quote that applies to this question that could be used as the first sentence of your essay. It should be specific to the question and tell the reader what side of the issue your essay will take.

My Fake Quote:

_____
_____
_____

ACT Writing Mini Lesson #3-The Introductory Paragraph

The introduction to your essay should be simple and "hook" the reader into your topic. Because your essay is graded holistically, a strong first impression is very important.

The introduction should contain three simple parts
1. Interest Creating Device (hook) - this will draw the reader into your topic
2. Preview of Coming Attractions
3. Thesis

The intro paragraph does not have to be long or complex, but it does need to be very clear.

The hook that most students should plan to use is the "fake quote," which is explained below. Simply put, students should make a up a declarative statement related to the prompt, and then attribute this prompt to a famous figure.

The three types of hooks:
1. The Rhetorical Question
2. The Anecdote
3. The Quote

Which of these three works best on the ACT Essay?

The Fake Quote:
An easy way to add depth to your examples and make your details more vivid is to employ the fake quote. The fake quote simply means to make some analytic or clichéd statement and attribute it to whomever you see fit. The fake quote can be used as a great hook and you can attribute it to your dad, your mom, or someone famous. The fake quote can also be added to your body paragraph as either from the protagonist of the book that you are referencing or from the historical figure that you are using.

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Practice with the Fake Quote:
Example question: "Should American high schools be more tolerant of cheating?"

My Fake Quote:

Ben Franklin once stated, "A cheater simply cheats himself out of an education."

The Rest of the intro Paragraph

Preview of Coming Attractions: This should be a few sentences describing your body paragraphs

Thesis: This should always be the last sentence of your introductory paragraph and in one sentence illustrate your main point. The thesis should be stated in active voice and must "take a stand" on the posed essay question.

Example Thesis:

Here is a thesis statement that will work regardless of what the question asks. Is it the greatest thesis statement ever? No. But it clearly states your position in one active voice sentence, and gives you one less thing to think about!

Although__(acknowledge counter argument)___......._____Pro #1_____ and _____Pro #2_____ demonstrate that….
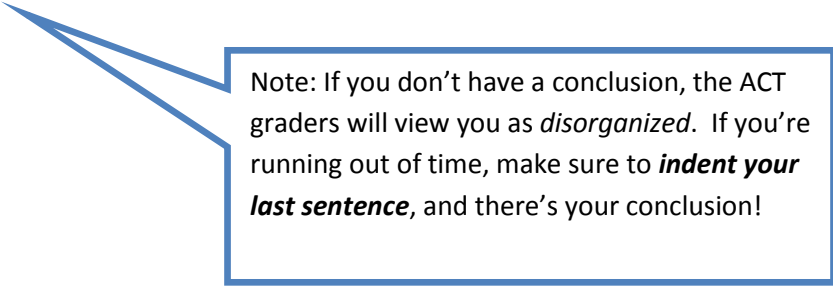
Your Job: Take the following question above and write a sample thesis to go with it.

The question: "Should American high schools be more tolerant of cheating?"

My thesis:

_____
_____
_____

Conclusion:

Your conclusion does not have to be long, but you must have one. The ideal concluding paragraph on the SAT essay summarizes your two examples, relates the two examples together, and adds a general analytic point.

Note: If you don't have a conclusion, the ACT graders will view you as *disorganized*. If you're running out of time, make sure to **indent your last sentence**, and there's your conclusion!

The Rest of the intro Paragraph

Preview of Coming Attractions: This should be a few sentences describing your body paragraphs

Thesis: This should always be the last sentence of your introductory paragraph and in one sentence illustrate your main point. The thesis should be stated in active voice and must "take a stand" on the posed essay question.

The suggested thesis format is not the only thesis statement that works for these questions, but this template provides students with enough of a guideline such that they do not have to spend extensive time thinking of a thesis.

We suggest that at the 26-minute mark, students wrap up their second body paragraphs and begin their conclusion.

Example Thesis:

Here is a thesis statement that will work regardless of what the question asks. Is it the greatest thesis statement ever? No. But it clearly states your position in one active voice sentence, and gives you one less thing to think about!

Although___(acknowledge counter argument)___......._____Pro #1_____ and _____Pro #2_____ demonstrate that....

Your Job: Take the following question above and write a sample thesis to go with it.

The question: "Should American high schools be more tolerant of cheating?"

My thesis:

Although some would argue that schools should relax cheating punishments, schools should not be tolerant of cheating because they must help teach children values and provide preparation for life in the workforce.

Conclusion:

Your conclusion does not have to be long, but you must have one. The ideal concluding paragraph on the SAT essay summarizes your two examples, relates the two examples together, and adds a general analytic point.

Note: If you don't have a conclusion, the ACT graders will view you as *disorganized*. If you're running out of time, make sure to ***indent your last sentence***, and there's your conclusion!

ACT Writing Mini Lesson # 4-The "Con" Paragraph

The ACT graders will be looking for your first body paragraph to acknowledge that another side of the argument could be taken. Use this paragraph to <u>acknowledge the counter-argument, and then destroy it!</u>

The con paragraph should include words like "although…" to show the readers that you grasp the entire issue, not just one side. This paragraph should include one example that would help those on the "other side" of your argument.

Sample Question

"Should American high schools be more tolerant of cheating?"

Con Paragraph Structure:

If you can answer the following questions in approximately the order below, your "con" paragraph will avoid repetition and specifically answer the question being asked.

1. Some would argue…(stating counter argument)
_____
_____

2. Example of counter argument….
_____
_____

3. Explanation of why this argument is flawed
_____
_____

The answer to the last question is the most important aspect of your analysis, as well as the one that most students forget.

ACT Writing Mini Lesson # 4-The "Con" Paragraph

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Sample Question

"Should American high schools be more tolerant of cheating?"

Con Paragraph Structure:

If you can answer the following questions in approximately the order below, your "con" paragraph will avoid repetition and specifically answer the question being asked.

1. *Some would argue…(stating counter argument)*
   Some would argue that American high schools should be more tolerant of cheating…

2. *Example of counter argument….*
   (Schools can't catch cheaters anyway, schools should teach students to use all resources possible to answer difficult questions-even if that means utilizing friends or the internet…

3. *Explanation of why this argument is flawed*
   Schools have a responsibility to teach/model the values that students need in the workforce, including integrity and honesty. If schools "allow" cheating they begin to fall down a slippery moral slope that would have disastrous consequences.

The answer to the last question is the most important aspect of your analysis, as well as the one that most students forget.

ACT Writing Mini Lesson # 5-The "Pro" Paragraphs

These two paragraphs form the bulk of your argument and should be used to prove your thesis. Each paragraph should contain only one example. Choose two examples that prove slightly different sides of your topic in order to make the most convincing argument possible.

Sample Question

"Should American high schools be more tolerant of cheating?"

1. *State your argument…*
   _____
   _____

2. *Specific example proving your argument….*
   _____
   _____

3. *Explanation of negative results if your argument was ignored*
   _____
   _____

4. *Explanation of positive results of your example/argument*
   _____
   _____

ACT Writing Mini Lesson # 5-The "Pro" Paragraphs

These two paragraphs form the bulk of your argument and should be used to prove your thesis. Each paragraph should contain only one example. Choose two examples that prove slightly different sides of your topic in order to make the most convincing argument possible.

Sample Question

"Should American high schools be more tolerant of cheating?"

5. State your argument…
_____
_____

6. Specific example proving your argument….
_____
_____

7. Explanation of negative results if your argument was ignored
_____
_____

8. Explanation of positive results of your example/argument
_____
_____

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ACT Writing Mini Lesson #6- Other Things to Note

Examples:

One of the most important aspects of your essays will be the examples that you choose to support your thesis.

Grammar:

Treat the ACT essay as you would any other, use correct grammar! Just because you only have 25 minutes does not be you should get sloppy with your grammar. Incorrect grammar can make you look like you did not take time and care while writing your essay and could receive a lower grade.

Vocabulary:

For your essay, try to incorporate the fanciest vocabulary that you are COMFORTABLE using. Do not simply look up a few big words and include them randomly in your essay. The graders will know whether or not you understand the vocabulary that you use.

Vocabulary II:

An easy way to improve your vocabulary on the ACT essay without much effort is to simply memorize and include a few **analytic transitions.** Include these words between your ideas and your writing will become more analytical with a more formal tone.

These transitions often come in 2 forms depending on whether your sentences are moving in the same direction or if they are moving in opposite directions.

Same Direction	Change of Direction

ACT Writing Mini Lesson #6 Other Things to Know (Writing Slides 12-13)

In terms of grammar and vocab, it's important to remind students that the ACT graders will not be "taking points off" for grammar and spelling, yet mistakes in these areas do not make kids sound smart or seem like they care.

These analytic transitions are helpful for students to include because they give readers a "roadmap" to a student's argument, even though the grader will probably not be reading every word

Examples:

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These transitions often come in 2 forms depending on whether your sentences are moving in the same direction or if they are moving in opposite directions.

Same Direction (blank for students)	Change of Direction (blank for students)
Therefore	*Yet*
Moreover	*Although*
Similarly	*But*
Next	*Though*
In addition	*Despite the fact*
Furthermore	*In contrast*
Hence	*In conclusion*
Last	*Rather*
Second	*However*

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The Two Most Important Words to Remember:

- **Concrete** examples- your examples must be real in that you should be talking about real books, events and people.

- **Vivid** details-your examples should include names of people and characters, places and settings, and dates of occurrence. The beauty of supplying vivid details is…THEY DO NOT HAVE TO BE TRUE! Vivid details are easy to fudge and they cannot mark you down for it. For instance, if you think that the story of Paul Revere fits perfectly into your thesis but you can't remember the year and the place that he made his famous ride. Simply make your best guess and move on. It's better for your VIVID DETAILS to be WRONG THAN NO DETAILS AT ALL!

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A Note about Passive Voice:

When learning to write, many of us focus on the adjectives that we use. We often think these adjectives make us sound smarter and make our writing more advanced.

The truth of the matter is that it is the VERBS that we use determine our level of writing. Take a look at any novel lying around and notice the verbs that the author uses. Specific verbs make writing more concise and allow the reader to see a clear picture of the scene being described.

The following is a list of passive voice verbs that should be avoided at all costs. Breaking the habit of these verbs can be difficult, but it is the surest way to improve your writing.

The List:

1.	13.
2.	14.
3.	15.
4.	16.
5.	17.
6.	18.
7.	19.
8.	20.
9.	21.
10.	22.
11.	23.
12.	

This concept is one of the least important for success on the SAT, but it is also one of the only aspects of this book that students should apply to their academic classes as well.

We suggest that teachers do not spend significant energy discussing this topic because it is very difficult for students to improve in the short-run.

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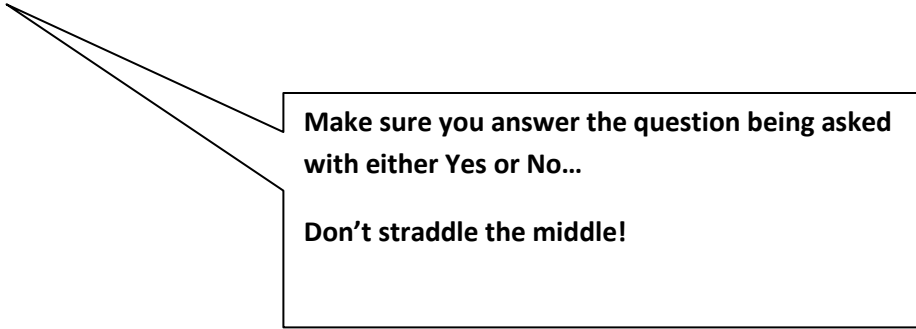
The following is a list of passive voice verbs that should be avoided at all costs. Breaking the habit of these verbs can be difficult, but it is the surest way to improve your writing.

The List (BLANK)

1. *am*
2. *is*
3. *are*
4. *was*
5. *were*
6. *be*
7. *been*
8. *being*
9. *has*
10. *have*
11. *had*
12. *do*
13. *does*
14. *did*
15. *might*
16. *must*
17. *may*
18. *shall*
19. *will*
20. *could*
21. *would*
22. *should*
23. *can*

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Example ACT Essay Questions:

1. In your view, should high schools be more tolerant of cheating?
2. In your view, should school computers contain filters that prevent students from visiting certain websites?
3. In your view, should three month summer vacations from school be maintained?
4. In your opinion, should high schools adopt dress codes for students?
5. In your opinion, should students be required to maintain a "C" average before receiving a driver's license?
6. In your opinion, should high schools require students to complete a certain number of hours of community service?
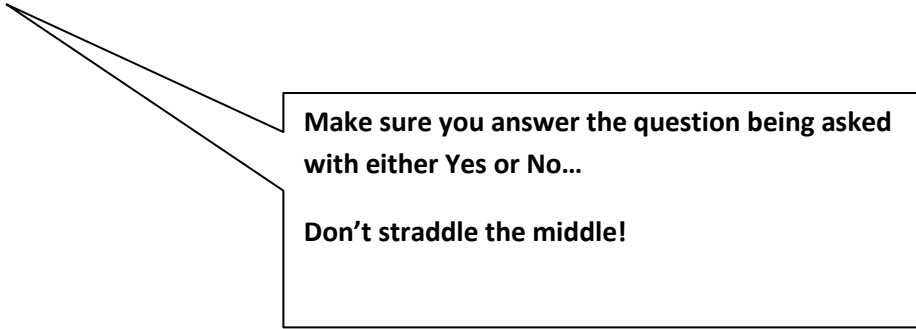
Make sure you answer the question being asked with either Yes or No…

Don't straddle the middle!

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